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SYPHILIS AND GONORRHEA

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SYPHILIS

AND

GONORRHEA

BY

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PREFACE.

In this book I have endeavoured to give an account of the chief points concerning syphilis and gonorrhea. For this purpose I have consulted the standard works of *Ricord*, *Diday*, *Buret*, *Alfred Fournier*, *Ernest Finger*, *Jonathan Hutchinson*, and *Berkeley Hill and Cooper*, together with a large number of original articles which have appeared during recent years. The more important of these are mentioned as references. To the information thus obtained I have added critical remarks and conclusions derived from my own professional experience. I have omitted special reference to the heart, lung, kidney, and alimentary canal, because syphilis of these organs presents no very characteristic features. In the heart endocarditis, myocarditis, and gummata have been found; and in the lung gummata and fibroid induration, the so-called 'syphilitic phthisis.' Syphilitic nephritis has been described, but must be difficult to distinguish, since it must

often be co-existent with chronic interstitial nephritis. With regard to the alimentary canal, we meet with stricture of the œsophagus and rectum, and ulcers of the stomach and intestine have been reported.

We must bear in mind that the first effect of syphilis is to cause changes in the bloodvessels, with resulting infiltration of the tissues with cells which form granulomatous tissue. This tissue, owing to occlusion of the bloodvessels which give it origin, is apt to necrose and ulcerate. At the same time, it tends to form fibrous tissue, causing constriction of neighbouring parts. These are the essential results of syphilis, and apply to any organ or tissue of the body.

My thanks are due to Mr. *Jonathan Hutchinson*, Sir *William Gowers*, Mr. *Henry Juler*, Dr. *Fletcher Beach*, Mr. *Arthur Cooper*, and Dr. *F. W. Mott* for their answers to inquiries and for permission to quote from their writings.

C. F. M.

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PART I

SYPHILIS

SYPHILIS AND GONORRHEA

CHAPTER I.

The History of Syphilis.

It was at one time supposed that syphilis appeared in Europe in the fifteenth century, but we have evidence to show that it dates back to remote antiquity.

Origin of the Term.—The word syphilis was originated by *Fracastor*, an Italian physician, who published a poem in 1530 entitled, *Syphilis sive Morbus Gallicus*. In this poem he describes the pagan gods, and assumes that a shepherd, whom he terms *Syphilus*, had addressed offensive words to Apollo. The god, in order to punish him, struck him with a disease of the genital organs. The inhabitants of the country afterwards called this the disease of *Syphilus* or **Syphilis.** Opinions differ as to whence *Fracastor* got the name, but the most probable derivation, according to *Buret*, is *syn* (σύν), and

philia (φιλία) love—*i.e.*, the companion of love. Before the time of *Fracastor* the disease was known under various names—'morbus gallicus,' 'mal napolitain,' 'mal des Allemands,' etc. The most usual was 'morbus gallicus.' Later on, when some resemblance was found to variola, syphilis was called 'le grosse vérole,' or great pox, and later it was called 'lues venerea.'

Date of Origin.—This was a debated point, some dating it from 1494, others from antiquity. It was said to have been introduced into Europe from America by *Christopher Columbus*. This is disproved by the multitude of names given to it at the time of the great epidemic of the fifteenth century. If imported from America it would probably have been called 'Mal Américain.' Some say it originated in Europe at the Siege of Naples in 1494. The probable truth is that syphilis was universal, but not in the same degree in all countries, or at all periods. It was also at that time little understood. Syphilis is probably as old as man. The evidences in proof of this view we shall now proceed to consider.

Syphilis in Prehistoric Times.—It is impossible to fix a date to limit the prehistoric period, for at the same time we find

certain nations cultivating science and having treatises on medicine, while certain others were in a state of barbarity. It is evident that Chinese manuscripts which date over 4,000 years are previous to sepulchres of the Gauls where pathological lesions have been found in bones.

At Solutré, in the Department of Saône et Loire, is a prehistoric spot where human remains have been found, apparently of an Asiatic race. Here a woman's skeleton was discovered with nodes on the tibia, which were pronounced by *Virchow* and *Parrot* to be syphilitic. *Parrot* has found traces of congenital syphilitic bone disease in five skulls of Peruvian infants. This shows that syphilis existed in Peru before the Spanish conquest. *Jourdanet* relates the history of syphilis in Mexico before the conquest, and refers to the opinion of Captain *Cook* that the disease existed in Oceania.

Syphilis among the Chinese 5,000 Years Ago.—In 1863 *Dabry* published a book entitled, *La Médecine chez les Chinois.* He, knowing the Chinese language, translated the manuscript, which escaped the holocaust commanded by the Emperor Tsin-che-houang. In the year 2367 B.C. the Emperor Hoang-ty collected all the writings which existed. From

these we learn, through *Dabry*, that the Chinese treated syphilis by mercurial inunction; also, that they recognised scabies, and treated it with sulphur. They understood venereal diseases better than they have been known since up to the time of *Ricord*. They knew the duality of chancres, which was only established in our time by *Ricord;* also that syphilis and gonorrhea were distinct diseases. A quotation from *Dabry's* book is given by *Buret*, which shows somewhat the extent of their knowledge:

'It happens sometimes that, several months after the cure of a venereal sore, the individual suffers suddenly from headache, with fever, pains in the bones, and vertigo; a short time afterwards small copper-red spots appear on the face, which increase gradually. The face becomes bloated, chiefly the nose; the speech becomes difficult; pain and itching of the throat. . . . These spots change to small purple nodules as large as peas, which discharge a thick and fœtid liquid; the body soon becomes covered with spots and nodules of the same nature; mucus flows from the nose; the breath is foul. The nodules, once excoriated, increase in size.'

There is also mention of condylomata, ulceration of the tonsils, and pigmentary syphilide

of the neck. It is also stated that the disease may be transmitted to new-born infants.

If we are astonished at this knowledge, we must remember that the Chinese invented gunpowder when Europe was using bows and arrows.

Syphilis was apparently known to the Japanese, but the only records are from the ninth century, and they are scanty.

Syphilis among the Egyptians (fourteenth century, B.C.).—Here the evidence is difficult to obtain, and only exists on papyrus and in inscriptions on granite. Egypt was for long, with Syria and Chaldea, the centre of debauchery, and, with the worship of Phallus, could not escape syphilis. Only two medical papyri have been found, in one of which is described a disease attacking the belly, limbs, joints, eyes, teeth, mouth, and anus. This suggests syphilis, but is not definite. However, Pharaoh is said to have contracted the disease from Sara, the wife of Abraham. Further proof has more recently been obtained by *Zambaco*, who sought for evidence of syphilis among the bones of the ancient necropolis at Cairo. Several bones were found showing evidence of spinal caries and rickets; also a

skull with perforation of the parietal bone, loss of a sequestrum, and reparatory process round the edges. In the same skull were similar lesions above the nasal bones. These had the appearance of tertiary syphilis.

Syphilis among the Hebrews in Biblical Times.—The evidence of syphilis found in the Bible must of necessity be vague, since the book is a medley of history and legend; also the words used to denote disease mainly refer to plagues and leprosy. However, there are many passages which, in all probability, refer to syphilis. In the fifth chapter of Proverbs we find the following: 'Keep thy way farre from her, and come not near the doore of her house, lest thou give thine honour unto others, and thy yeares to the cruell, and thou mourn at thine end when thou hast consumed thy flesh and thy body.' This, according to *Buret*, refers to syphilis.

The Plague of Baal-Peor (1451 B.C.). —In Leviticus we read that Moses prohibited prostitution. As a result of this the Hebrews went among the Midianite and Moabite girls, who initiated them into the cult of Baal-Peor. This cult was the worship of a God similar to Priapus, whose temples were simply places of

debauchery. The orgies carried on at these temples were naturally favourable to the propagation of venereal diseases, and resulted in the plague of Baal-Peor, which, according to *Hominic*, was nothing more nor less than syphilis (*Les maladies vénériennes chez les Hébreux*). Baal-Peor corresponded to the Priapus of the Greeks and Romans, the Linga of India, and the Phallus of the rest of Asia; and one may still see in China a phallus carved in stone above the doors of brothels. The result of the plague was the death of 24,000 people by the order of Moses. Moses also declared war against the Midianites because of Baal-Peor. All the men and women were killed except virgins and female infants. The evidence of this in the Bible is found in Numbers xxv.: 'Now whiles Israel abode in Shittim, the people began to commit whoredom with the daughters of Moab. . . . And Israel coupled himselfe unto Baal-Peor; wherefore the wrath of the Lord was kindled against Israel. . . . Then Moses said unto the Judges of Israel, Every one slay his men that were joined unto Baal-Peor. And there died in that plague foure and twentie thousand.' And in Numbers xxxi.: 'And they warred against Midian, as the Lord had commanded Moses, and slew all the males.

But the children of Israel tooke the women of Midian prisoners, and their children. And Moses was angry with the captains. And Moses said unto them, What? Have ye saved all the women? Behold these caused the children of Israel through the counsell of Balaam to commit a trespasse against the Lord as concerning Peor, and there came a plague. Now therefore, slay all the males among the children and kill all the women that have known man by carnall copulation. But all the women children that have not known carnall copulation keepe alive for yourselves.' Even this radical method of dealing with the disease did not stamp it out, for we read in Joshua xxii.: 'Have we too little for the wickednesse of Peor whereof we are not cleansed unto this day?'

In Genesis xii. we read of Abraham's journey into Egypt with Sara his wife, who for diplomatic reasons passed as Abraham's sister. 'So the woman was taken into Pharaoh's house. But the Lord plagued Pharaoh and his house with great plagues because of Sarai, Abram's wife.' This, according to *Hominic*, suggests that Pharaoh contracted syphilis from Sara, and that the disease spread in his house. According to the same writer, David suffered from syphilis

contracted from Bathsheba, with whom he committed adultery, and had a child that died on the seventh day (2 Sam. xi., xii.). David's symptoms are described in the Psalms, and certainly suggest syphilis. We read, 'for my bones are vexed' (Ps. vi.); 'all my bones are out of joynt'; 'my tongue cleaveth to my jaues' (Ps. xxii.); 'there is nothing sound in my flesh—neither is there rest in my bones, because of my sinne—my wounds are putrefied and corrupt, because of my foolishness—mine heart panteth; my strength fayleth me, and the light of mine eyes, even they are not mine own' (Ps. xxxviii.).

According to *Buret*, the leprosy of the Hebrews included many cutaneous diseases. In Lev. xiii. is an account of leprosy, and the methods of dealing with it, but whether this was leprosy or syphilis is difficult to say. We know that in former times the two diseases co-existed and were confounded, because in a skull from the ancient leprosy hospital at Montpelier, the parietal bones were affected with syphilitic caries, and *Broca* and *Lancereaux* also found syphilitic bones in leprosy cemeteries (Zambaco).

Syphilis among the Hindus (1000 B.C.).—Among the Hindus the cult of Linga was similar to that of Baal-Peor. The ancient

Hindu books were called Vedas, and one of these, 'Ayurveda,' deals with medicine. This was translated by *Hessler* into Latin, *Medicinæ Systema a venerabili Dhanvantari demonstratum, a Susruta discipulo compositum.* Dhanvantari was looked upon as the god of medicine in India, aud Susruta was his pupil. In this work there is mention of gonorrhea, cystitis, fistula, tumours of the anus, orchitis, cervical swellings, chancres, ophthalmia, papules of the ears, nose, mouth, throat, and palate, alopecia and ulcerating swellings of the feet, hands, and clavicles. This disease, which is referred to as 'terribilis morbus,' must, according to *Buret*, have been syphilis. It is also interesting to note that small-pox was apparently known in India, and treated by vaccine from the cow, thus anticipating *Jenner's* discovery by many centuries.

According to *Klein*, the Hindus knew the preparations of mercury, and used them for the treatment of syphilis (*De morbi venerei curatione in India orientali usitata*, 1795).

Syphilis among the Greeks (B.C. and A.D.).—Among the Greeks the worship of Priapus was practised, probably with the usual results. Although there is no actual description of syphilis in *Hippocrates* (fifth century B.C.),

yet there are many allusions to it. The apparent silence of Hippocrates is attributed by *Proust* to the better hygienic condition of the people and to the attenuation of the disease by climate (*Traité Élémentaire de Pathologie*, 1874). It is more probably due either to misinterpretation of the Greek text or to diplomatic reasons. In the 'Aphorisms' of Hippocrates, Section 111, is a passage referring to the sores of the genitals, ulceration of the mouth, and ophthalmia. This suggests syphilis. *Galen* (second century A.D.) describes vegetations on the genitals and around the anus, some of them malignant. *Dioscorides* (second century A.D.) also mentions ulcers of the mouth, genitals, and anus. *Dion Chrysostomus*, a Greek orator, refers to a 'professional malady' attacking the nose in those who practised sodomy, a practice which was then prevalent. This, according to *Buret*, was probably syphilitic necrosis of the nasal bones. *Thucydides* (fifth century B.C.) in describing the Plague of Athens, in his history of the Peloponnesian war, refers to the disease attacking the sexual parts, the hands and feet. Hence the Plague of Athens was probably syphilis.

Syphilis among the Romans.—With the decline and fall of the Roman Empire, and the worship of Priapus, it is only reasonable to

suppose that syphilis was rampant. The disease is referred to as 'ficus,' a fig, from the supposed resemblance of syphilitic lesions to the reddish and granular appearance of a cut fig. *Celsus* (first century B.C.), in his *Medicina*, Lib. VI., cap. xviii., describes hard and soft chancres and phagedena; also ulcers of the mouth, nose, and tonsils. *Pliny* (A.D. 80) speaks of a disease affecting the face and spreading to the neck. This also affected the hands, and was propagated by kissing. The disease was spread by the custom of virgins, before marriage, offering their virginity to the god Priapus, who was represented as a figure with an enormous erect penis. However, other maidens, who were not virgins, also practised the custom, and so probably propagated the disease to the virgins, who were possibly genuine, but certainly foolish.

Hence we see that among all peoples of antiquity there were diseases originating in debauches and orgies disguised under the name of fêtes held in honour of Venus, Bacchus, Baal-Peor, Phallus, and Priapus. These diseases were difficult to cure, and the victims prayed to the gods for relief. So certain temples were places for debauch in the evening, and, as *Buret* quaintly puts it, 'veritable dispensaries in the morning!'

Conclusion.

The study of the history of syphilis thus confirms the old adage that there is 'nothing new under the sun.' The great pity is that most of the ancient Chinese documents were destroyed. If we had these before us now, it might teach some of us to be more modest, and not to claim as recent discoveries things that were known 5,000 years ago. *Ricord* is said to have remarked, 'Au commencement Dieu créa le ciel, la terre, l'homme, et les maladies vénériennes!'

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'Geneva; or, Breeches Bible,' 1576.
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(The Biblical quotations have been compared with those in the Authorized Version and found to differ in phraseology only.)

CHAPTER II.

Pathology.

Syphilis is a specific infectious disease introduced into the organism by contagion or by heredity; chronic in evolution and indefinite in duration; essentially intermittent in manifestations and constituted by a series of symptoms or lesions which may, under forms naturally diverse and variable in severity, affect all the systems of the economy (*Fournier*). Presumably syphilis is a microbial disease, but the actual bacillus has probably not yet been discovered. The most recent researches on this point we shall consider later. The virus enters the system usually through a crack or abrasion in the skin or mucous membrane. Whether an actual solution of continuity is necessary is open to question, and the virus may very possibly penetrate the skin, and almost certainly the mucous membrane without a breach of the surface. The virus enters the lymphatic glands and thence enters the blood. At the

point of entry the virus multiplies and forms the initial lesion, or chancre. The essential pathology of syphilis consists in disease of the bloodvessels and the results thereof, and this applies to any organ or tissue of the body. The process consists of small cell infiltration, commencing in the walls of the bloodvessels and extending to the perivascular tissues. In this way general cell infiltration occurs, or localized gummata, the gummata varying in size from what are known as miliary gummata up to large tumour masses.

The histology of the gummata resembles closely that of the tubercle nodule and reveals giant cells and epithelioid cells, but differs in the absence of the tubercle bacillus. The tendency of the gumma is on one hand to caseate and break down, on the other hand to form fibrous tissue. Both processes usually go on at the same time—caseation in the centre and fibrosis at the periphery.

Syphilitic Arteritis.—The disease begins in the intima and adventitia, the muscular coat being only affected by extension. The process consists in cell infiltration, which causes narrowing of the lumen and sometimes complete occlusion. The final stage is the reduction of the vessel to a fibrous cord. The endothelium is not affected till the process is well advanced.

Syphilis is probably a predisposing cause of atheroma, but syphilitic endarteritis differs from atheroma in its rapid development and in causing narrowing of the lumen, while in atheroma the process is much slower, and the first effect is widening of the vessel. The syphilitic change is more localized and usually affects the small arteries. In atheroma the larger arteries are first affected and fatty degeneration takes place early.

Aneurysm.—Syphilitic arterial disease is a cause of small aneurysms, especially in the vessels of the brain; but whether large aneurysms, as of the aorta, are due to syphilis is still a debated point. *Welch*, in thirty-four cases of aortic aneurysm, found certain syphilis in seventeen and probable syphilis in eight. *Ensor* has reported the case of a married couple, both syphilitic, and both the subjects of aneurysm; in the male there was aneurysm of the arch of the aorta, and in the female of the descending aorta. At autopsies aneurysm has been found associated with typical gummata of the liver, bones, and heart. *Dohle* has described syphilitic disease of the tunica media of the aorta in aneurysm, with round-celled infiltration and miliary gummata. Hence it would appear that

syphilis is at any rate one cause of aneurysm, and that it may be an indirect cause by predisposing to atheroma.

The Stages of Syphilis.—Syphilis was divided by *Ricord* into three stages—primary, secondary, and tertiary. This division is an artificial one, but useful clinically. *Kaposi* states that there may be a true indurated chancre without any further effects. This is analogous to a local tubercle without the development of general tuberculosis. Hence we may have the following conditions: (1) Absence of the primary sore; (2) Syphilis limited to the primary sore; (3) Tertiary syphilis with no recognisable primary or secondary stages.

There is no sharp line of demarcation between the anatomical changes in early and late syphilis. This is especially seen by examining the **liver** in both the congenital and acquired disease. The viscera are probably often affected by syphilis, but there is seldom an opportunity of seeing the early stages *post-mortem*.

The Liver in Congenital Syphilis.—Here we have a development of minute round cells—miliary gummata—and fibrous tissue, not only along the portal sheaths, but between the groups of liver cells ('pericellular fibrosis').

There is also more or less atrophy of the liver cells. Sometimes interstitial fibrosis is in excess of miliary gummata; this points to a process of tissue disturbance caused by a toxin, which leads to atrophy of the liver cells and development of connective tissue. A similar condition is found in the kidney. The miliary gummata and fibrosis may affect the whole organ or circumscribed areas. There may also be well-defined gummata. All these changes are characteristic of tertiary rather than of secondary syphilis.

The Liver of Acquired Syphilis.— In the secondary stage there may be catarrhal hepatitis with jaundice. This may or may not lead to fibrosis. In the tertiary stage gummata occur with pericellular fibrosis. There may be active changes in the liver as long as fourteen years after infection, showing that the virus may be latent under certain conditions and revive later on. Cicatrices and fibroid conditions occur, indicating a previous attack of syphilis which has healed. Perihepatitis is a complication rather than a result of syphilis. The conclusion is that the pathological changes of congenital and acquired syphilis are identical, and that the same process is at work in secondary and tertiary syphilis. This bears on the question of the in-

fectiousness of tertiary lesions. Some authors state that tertiary syphilis is not infectious; others say that infection may occur five or ten years afterwards. These statements can be reconciled by considering first that many lesions of tertiary syphilis are old-healed scars; secondly, that, if latent, the resistance of the tissues is such that in most cases there is so much local reaction that infection tends to remain localized and the virus is not disseminated, and neither the blood nor the secretions contain the virus; thirdly, in some cases the reaction of the tissues is less and the virus becomes disseminated, and may cause infection in the late tertiary stage.

Bacteriology.

The question whether syphilis is confined to the human species cannot yet be regarded as settled, but several articles have recently appeared on the subject which, if not conclusive, are, at any rate, of interest. *Van Neissen* claims that he has not only found the syphilis bacillus, but also cultivated it on agar and bouillon media. Furthermore he claims to have successfully inoculated animals with it—viz., four apes, one pig, one dog, one rabbit, and three guinea-pigs. He states that the course of the disease in the

inoculated animals was the same as that of syphilis in man, the main points being slight general reaction, no fever, a tendency to spontaneous healing, the involvement of the skin, lymphatic glands, and nervous system. On the other hand, *Van Neissen* failed to obtain culture reproductions of the contagium. We may add that Professor *V. Petersen*, who saw the eruptions upon apes produced by inoculation, regarded them as eczema and impetigo.

Van Neissen's bacillus was obtained from moist papules, and also from the blood of syphilitic patients. Some of the forms described by him resemble those of *Lustgarten*, and in some instances the differential stains proposed by *Lustgarten* applied to his bacilli.

Another article is by *Adrian*. This writer used for his experiments guinea-pigs, dogs, and pigs. In guinea-pigs and dogs the experiments gave negative results, but in pigs he observed manifestations clinically and microscopically like human syphilis. The author inoculated into the abrased cleansed skin of the abdomen of two pigs the scrapings of a hard chancre. Eight weeks after inoculation an eruption similar to a maculo-papular syphilide appeared on the trunk of both pigs. The papules disappeared without

leaving scars or pigmentation. External parasites were excluded as a cause of the eruption. Histological examination of the papules showed a resemblance to the structure of the human syphilitic papule.

Later investigations on the bacteriology of syphilis are by *Justin de Lisle* and *Louis Jullien.* Experiments were made with the blood of patients with recent syphilis, not under treatment. Examination of the blood showed the presence of granular refractive bodies, which have been seen by other observers. These bodies give no result by inoculation or by culture. This is due to the fact that syphilitic blood when coagulated is innocuous. This depends on the presence in the serum of coagulated blood of a substance, alexine, which has a bactericidal action. In order to avoid the generation of this substance, plasma and fluid obtained from blisters were used, in which alexine was found absent. In this fluid a bacillus was found of a polymorphous nature varying from a short bacillus to an elongated filament. This bacillus was mobile, and coloured with ordinary stains, but not by *Gram's method.* When cultivated on bouillon it forms a light veil. It liquefies gelatine slowly. Stab preparations do not form a cone, but the liquid in the

tube is flaky, with a greenish colour. The gelatine is not coloured, and its surface remains smooth. The organism grows on glycerinated potato in the form of a whitish coat.

The bacillus becomes filamentous after five or six days, and after about ten days granular, and resembles the round bodies mentioned above seen in the plasma. However, in this condition re-cultivation may reproduce the original bacillus. At the end of thirty days all is granular and apparently dead, and cultivations in ordinary media remain sterile ; but cultivation in a collodion sac may reanimate it. Thus the granular condition seems to contain the most resistant part of the organism. Hence the remarkable power of survival of the disease.

Cultures injected into the peritoneum of the guinea-pig caused paralysis, emaciation, abortion, and death in ten to fifteen days. Young guinea-pigs were killed in twelve hours. When injected under the skin the same symptoms were caused, together with loss of hair and the formation of an indurated patch at the seat of inoculation with ulceration and enlargement of the neighbouring lymphatic glands. At the autopsy the urine was albuminous, the spleen contracted, sometimes the kidneys and liver in fatty degeneration, and the

blood always sterile. In the frog, death occurred in thirty-six hours.

The fact that the dead bodies of the animals were sterile led the authors to investigate if the same was the case in man. They mention the rarity of infection from the conduction of post-mortem examinations on syphilitic subjects. A culture of the microbes, aged three days, put in contact with the serum of a person with active syphilis caused agglutination. This did not occur with the serum of a healthy man.

Cultures inoculated into syphilitic persons gave no result. The alexine contained in the serum of an animal inoculated repeatedly with syphilitic plasma fixed the microbe. A culture was injected into a vein in a rabbit. After three days the animal was bled and plasma and serum obtained. The plasma contained abundance of microbes, but the serum none, when inoculated on the media mentioned above. The same researches with the plasma of non-syphilitic subjects never showed evidence of the microbe in question.

The authors sum up as follows: (1) They have found the microbe in cases of active syphilis and not in cases free from syphilis; (2) the microbe agglutinates the serum of syphilitic subjects and not that of healthy subjects; (3) in animals it

causes special lesions comparable to those found in man ; (4) it fixes the alexine of animals inoculated with syphilitic products ; (5) cultures have no effect on syphilitic subjects ; (6) as in syphilis of man, the microbes die with the infected animals.

The latest experiments published have been made by *Waelsch*, who has investigated the presence of *Van Neissen's* bacillus in cases of syphilis in the cerebro-spinal fluid, the blood, and the secretion from primary chancres. In sixteen out of thirty-five cases of secondary syphilis a bacillus was found in the blood identical with that of *Van Neissen ;* but it was not present in the cerebro-spinal fluid. The bacillus was also found in the discharge from chancres and in a papular syphilide in the scrotum and buttocks. The bacillus was not found in the blood of non-syphilitics. Inoculation of guinea-pigs and rabbits with a culture of the bacillus gave negative results, but in three pigs and an ape multiple injections produced, after several weeks, an erythematous and papular eruption, without, however, syphilitic characters. The bacillus was not isolated from these animals, and there were no lesions in the internal organs. A bacillus similar in all respects to the above was isolated from preputial secretion, and from the genito-crural folds and

axilla. *Waelsch* hence concludes that the bacillus of *Van Neissen* is not that of syphilis, but one which is common in the skin, and may gain an entry into the blood from primary syphilitic lesions.

Conclusion.

This is how the matter stands at the present date. Although it is almost certain that syphilis is a microbial disease, the investigations hitherto published cannot be regarded as conclusive, and it remains for further research to clear up the matter.

Inoculation of Monkeys with Syphilis.

The most recent experiments have been made by *Metchnikoff* and *Roux*, who inoculated a young female chimpanzee by scarification in the preputial fold of the clitoris with material obtained from a syphilitic primary sore of a month's duration. The animal was also inoculated in the forehead with syphilitic virus from ulcerated mucous plaques. No immediate effect followed the inoculations, but on the twenty-sixth day a small vesicle appeared at the site of the inoculation in the preputial fold. The vesicle developed into an ulcer, with distinct induration, and inguinal adenitis followed, similar in nature to syphilitic adenitis. Professor *Fournier*, who examined the

sore, considered it to be syphilitic. Secondary syphilis is said to have followed. *Lassar* has also performed similar inoculation in another anthropoid ape. Secretion from a primary sore was rubbed into scarifications of the forehead and lips. In addition to this, small pieces of chancre were inserted into small pockets in the skin of the forehead and ears. The chancre used in this experiment was an extragenital one, on the arm of a man, caused by tattooing. In fourteen days two apparently characteristic sores appeared on the forehead, and these were followed by a secondary papular syphilide of the palms, soles, brow, and anus. Cervical adenitis also occurred, and alopecia of the front of the scalp. In *Lassar's* case no secondary material was used for inoculation, and it is interesting to note that inoculation in both monkeys was effected by virus from a primary sore.

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CHAPTER III.

Chancres.

Primary venereal sores which are followed by syphilis are so variable that it is often impossible to foretell from the nature of the primary lesion whether syphilis will follow or not. If we have to deal with a typical hard sore or Hunterian chancre, we can reasonably assume that syphilis will follow ; but many soft sores are followed by syphilis, especially in females, among whom the typical hard sore is less common than in males. Again, a soft sore, appearing a few days after connection, may become indurated in the course of a few weeks, owing to double inoculation. Enlargement of the glands in the groin helps us in the diagnosis to some extent, but must be regarded with caution. If the glands are distinctly hard and enlarged, combined with induration of the primary sore, the diagnosis is almost certain ; but the so-called ' shotty ' glands are deceptive, and may occur in many persons

after herpes preputialis or other simple sores on the penis. In some people, in fact, they occur in the absence of any sore.

The typical hard sore is of the nature of a desquamating papule with an indurated base, and generally appears four or five weeks after the infectious coitus. It may ulcerate and form a sore with a granular base, secreting a thin discharge. On the other hand, it may disappear spontaneously without specific treatment, and yet be followed by secondary syphilis. The hard sore is usually single, but if several points of surface have been inoculated there may be several.

Typical soft sores have a punched-out edge, a grayish base, and a zone of inflamed skin around them. They are often multiple, and can reproduce themselves by secondary inoculation (in the same patient).

Both hard and soft sores may become phagedenic from infection with a new virus. The ulceration may then spread so rapidly as to destroy a large part of the penis, unless it is vigorously treated. As a general rule a sore which becomes phagedenic is followed by secondary syphilis.

There are three main forms of syphilitic

chancre: (1) A raised papule with very little induration; (2) a disc of induration without ulceration; (3) an ulcer with indurated base. The inguinal glands are nearly always enlarged, indolent and painless, and not adherent to the skin or deep tissues. In half the cases there is also thickening of the lymphatics of the groin. As regards the situation, *J. Hutchinson, junr.*, from an examination of 125 cases in the male, found 60 per cent. on the inner side of the prepuce, 27 per cent. on the outside of the penis, 8 per cent. on the glans, and 4 per cent. at the meatus. In 20 per cent. of the cases the sores were multiple. Sometimes the enlarged glands are on the opposite side to the sore, owing to crossing of the lymphatics of the penis. A rare form of chancre is the 'ambustiform,' which resembles malignant pustule; it is characterized by a central black scab surrounded by a red zone of inflammation.

In women the chancre is usually situated on one labium or near the clitoris. Occasionally chancres occur in the vagina or on the cervix uteri.

Extra-genital Chancres.—These may occur in almost any part of the body. They are commonest on the fingers, where they are not infrequently contracted by medical men and

midwives in treating syphilitic cases. They may also occur on the lips and face from kissing, or drinking out of glasses recently used by infected persons, or by smoking the same pipe. They may be contracted on the tonsils, or on various parts of the body, during the performance of abnormal sexual methods. A remarkable case was recorded by *Fournier* of a medical man, who contracted a chancre of the tonsil by sucking his paper-knife, by force of habit, after using it as a tongue-depressor in a case of syphilis of the throat. *Jeanselme* (*Journ. des Praticiens*, October 17, 1903) describes a case of a man who was cut in the chin by a barber. The 'hyaline block' was used to stop the bleeding. The cuts did not heal, and thirty-eight days afterwards two indurated chancres developed, with submaxillary adenitis. A macular syphilide developed at the same time. Extragenital chancres are seldom typical, being usually only granular patches with a raised edge. The subsequent course of the disease is said to be more rapid than normal.

Relapsing Chancre. — This was described by *Hutchinson* and *Fournier* independently. *Hutchinson* describes it as follows: 'Occasionally we encounter a tendency to return

to induration, and perhaps ulceration also, in the site of a former true chancre. This may happen at long periods, say some years after infection.' These sores may be due to gummatous infiltration at the site of the chancre. It is also possible that some of them are cases of second infection, a subject we have dealt with in another chapter.

Chancres of the penis must be diagnosed from epithelioma, which does not always take on the form of a cauliflower growth, but sometimes arises as a disc of induration resembling a primary chancre. Also a chancre may become epitheliomatous in a cancerous subject.

CHAPTER IV.

*The Skin.**

In this chapter I propose to discuss the diagnosis between syphilis and some of the chief affections of the skin, taking them in the reverse order.

Let us first consider a few lesions affecting the penis which have to be diagnosed from venereal sores.

Herpes Preputialis, or Genitalis.—This is most likely to be confounded with the soft sore. The chief differences are: (1) Herpes, if seen early, is seen to consist of multiple vesicles situated on a reddened base. They soon, however, become converted into small ulcers, which are cleaner and less purulent than the soft sore. The soft sore is usually at first single. (2) There is more itching and burning

* The author wishes to draw particular attention to the beautiful and life-like plates contained in Jacobi's 'Atlas of Skin Diseases' (Rebman, Limited, London, and Rebman Company, New York), illustrating many of the diseases mentioned in this chapter.

sensation in herpes than in soft sore. (3) The herpetic sores are not auto-inoculable. It must, however, be borne in mind that a patient with herpes genitalis may become inoculated in the usual way by the syphilitic virus or the virus of the soft sore, or both. In fact, herpes genitalis is not infrequently the starting-point of venereal sores, since it offers an easy point for inoculation.

Inflamed Smegma Glands.—These often occur from simple irritation with or without sexual connection. They arise as small yellow bodies the size of a large pin's head, and when irritated may form small sores, which may be mistaken for venereal sores. Such sores may, of course, as in the case of herpes, become inoculated with the venereal poisons.

Excoriations. — Simple excoriation, or tearing, of the mucous membrane of the prepuce may lead to the formation of a shallow ulcer, which may be mistaken for a venereal sore. The diagnosis depends on the absence of all the characteristic features mentioned above. But whether such an excoriation will be followed by syphilis or not cannot be foretold, since it depends simply on whether or not the syphilitic virus has gained an entry through the breach of surface.

Secondary Syphilis.

The classical features of secondary syphilitic affections of the skin are stated to be:

1. The tendency to polymorphism, several different types of skin lesion being present in the same case and at the same time.
2. The copper or raw-ham colour of the eruption.
3. The symmetrical distribution.
4. The tendency to affect the flexor surfaces of the limbs.
5. The absence of itching.

Polymorphism occurs in the large majority of cases, the commonest combinations being the squamous and papular eruptions, or the papulo-squamous syphilide. This is so often the case that it is usually unwise to diagnose syphilis when only one type of skin lesion is present, unless there are other signs of syphilis. The statement that secondary eruptions usually affect the flexor surfaces of the limbs does not hold good in my experience; the extensor surfaces are very often affected. The absence of itching, again, is by no means constant. Many syphilitic eruptions are attended by more or less itching or burning sensations. This no doubt depends to a

great extent upon the degree of irritability of the skin of the affected person.

The diagnosis of syphilis of the skin depends to a large extent upon the co-existence of other signs of secondary syphilis, especially the injected condition or ulceration of the throat, and the adenitis affecting the post-cervical and sub-occipital glands, the presence of a venereal sore, etc. In the absence of such confirmatory evidence diagnosis is often difficult. The history of the case is of little value, because, in the first place, it is often wilfully concealed, and, secondly, the primary sore may be so small as not to be noticed in a person with a long foreskin ; or, as mentioned above, it may be absent.

I now propose to consider some of the skin lesions most likely to be confounded with syphilis.

Erythema Intertrigo. — This is a common affection in babies, and is often confounded with the eruption of hereditary syphilis. The difference consists in : (1) The affection in intertrigo is usually limited to the parts covered by the napkins ; in congenital syphilis it extends down the legs, often to the heels and soles of the feet ; (2) the eruption is more copper-coloured in congenital syphilis ; (3) other signs of congenital

syphilis are usually present. It is unwise to diagnose congenital syphilis from the presence of an erythematous eruption on the groins and nates, etc., in the absence of other symptoms.

Other forms of erythema, such as erythema multiforme and its subdivisions, erythema iris, etc., are usually too well defined and characteristic to be mistaken for syphilis. The only true erythematous eruption of acquired syphilis is the **roseola** rash, the earliest secondary phenomenon. This is symmetrical, and appears first on the loins and abdomen, afterwards on the chest and limbs. It varies from a faint reddish mottling to discrete erythematous spots, soon fading to a grayish colour. It may have to be diagnosed from the commencement of specific fevers, such as measles, German measles, and scarlet fever; but the concomitant symptoms of these fevers and the rapid development of the typical exanthem should leave no question in the diagnosis.

Pityriasis Rosea. — This is an uncommon affection, and might be mistaken for syphilis. This disease runs a definite course as a rule, commencing with a circular patch, usually situated on the trunk. This patch

has a yellow centre with a red border. In the course of a week the whole trunk may be covered with similar spots of a smaller size than the original one. Some of these remain as maculæ; others become circinate. The eruption is usually limited to the trunk. There is very little scaliness. After five to eight weeks the eruption gradually disappears. The disease is often mistaken for syphilis, chiefly because its spontaneous disappearance is often attributed to the anti-syphilitic treatment which has been given. The eruption differs in colour from most syphilides, being more that of chamois leather. Also the other signs of syphilis are absent. The affection causes more itching than is usual in syphilis.

Psoriasis.—A typical case of psoriasis is easily diagnosed from syphilis. The elbows and knees are usually affected; the scales are abundant and pearly white, and when removed leave a bright red patch. In syphilitic psoriasis, or the **squamous syphilide**, the spots are more regularly distributed, and usually mixed with other types of skin lesion (papules and maculæ); the scales are less abundant, of a dirty colour, and less adherent. When removed they leave brownish spots.

These points hold good for typical cases. However, many atypical cases of psoriasis are met with, and in old-standing cases, when the scales have mostly disappeared, and pigmentation of the skin has taken place, it is often difficult to diagnose it from syphilis, except from the history and the absence of other signs of syphilis.

Eczema Palmaris.—This is sometimes difficult to distinguish from secondary syphilide of the palm, the so-called 'palmar psoriasis' of syphilis. Both conditions are modified by the presence of the thick epidermis of the palm. Eczema palmaris seldom forms vesicles, but leads to irregular thickening of the epidermis and the formation of fissures. The affection usually begins at the wrist or the ball of the thumb, and spreads to the palm secondarily. The nails may be involved, and become pitted and furrowed, and split vertically and into lamellæ.

The **palmar syphilide** may occur in the secondary period, when it is usually symmetrical. It begins as a copper-coloured spot, over which the epidermis becomes thickened, and either cracks or peels off. A somewhat similar condition may occur later in the tertiary period, and con-

stitute the only sign of the disease. This is often caused by local irritation, and is hence often unilateral.

The diagnosis of the earlier form of syphilide is usually easy, since it is generally associated with other syphilides elsewhere. The later tertiary form differs from palmar eczema by appearing in the centre of the palm, which eczema rarely does. Old-standing cases of either disease are often difficult to diagnose, and can only be distinguished by the results of treatment.

Simple psoriasis of the palms is rare without the typical eruption elsewhere.

Lichen Planus. — A typical case of lichen planus cannot well be mistaken. The disease consists of papules, with an angular outline and shiny surface. They often have a lilac tinge. The most common situations are the flexor surfaces of the wrists, the inner sides of the knees, and the back of the neck. The papules often coalesce and form patches, but some isolated papules are found usually round the margins. As the papules disappear they leave much pigmentation, and at this stage the disease might be mistaken for the pigmented marks of a secondary syphilide. However,

as a rule, some characteristic papules can be found, and the other signs of syphilis are absent.

Leucoderma. — In this disease there is a disappearance of pigment from the skin and hairs affecting certain areas. The skin surrounding the patches is often of a darker colour than the normal skin. There is also a condition of leucoderma met with in secondary syphilis, especially in women. This nearly always affects the back and sides of the neck. It is considered by some to be a valuable diagnostic sign of syphilis. The spots are usually small and more discrete than in ordinary leucoderma, but the distinctions between the two are not conclusive.

Acne.—The secondary syphilide occasionally appears as an acniform eruption, especially, I believe, in persons liable to ordinary acne. It is diagnosed as syphilitic by appearing on the trunk and limbs, where acne seldom occurs, by the absence of comedones, by the early appearance of other more typical syphilitic maculæ or papules, and by the other signs of syphilis. I have, however, seen one case where the eruption remained of an acniform and uniform character for about a week before the

diagnosis was quite cleared up by the appearance of other symptoms.

Variola. — Small-pox, especially a mild attack occurring in a patient vaccinated when a child, may be mistaken for a pustular syphilide. Variola first appears on the face and wrists, and then on the back and limbs. The eruption consists of hard red papules embedded in the skin. In a day or two these become vesicular, and then pustular, with an inflammatory zone around them. The centre of each pustule is usually umbilicated, but not always. After the ninth day the pustules form scabs, which leave pitting proportionate to the severity of the disease. As a rule, the accompanying fever and constitutional disturbance will clear up the diagnosis. A uniform pustular syphilide is rare apart from that which leads to rupia, and in this case the pustules are situated more widely apart, and are of larger size than the small-pox pustules.

Varicella. — When chicken-pox occurs in an adult, and the vesicles become pustular, it may be confounded with syphilis. The points mentioned above with regard to variola will apply also to varicella in diagnosing it from syphilis.

Pemphigus. — The pemphigoid syphilide, or 'syphilitic pemphigus,' occurs almost exclusively in hereditary syphilis. In acquired syphilis it is rare. It is almost limited to the palms and soles, and is usually associated with other symptoms of syphilis.

The etiology of pemphigus is a part of dermatology which is at present still open to discussion, and is likely to remain so for some time. The point with which we are concerned is the diagnosis of simple and syphilitic pemphigus. As stated above (statements originally derived from Dr. *Radcliffe Crocker*, which agree with my own observations), pemphigus is rare in syphilis, except in hereditary affections of the palms and soles.

Alopecia. — Syphilitic alopecia may occur as: (1) A general thinning of the hair occurring in the early secondary period, and due to malnutrition. (2) Round patches resembling alopecia areata. This form is distinguished from alopecia areata by its symmetrical distribution and amenability to anti-syphilitic treatment. (3) A loss of hair in patches at the site of eruptions of the scalp which have involved the hair follicles. (4) In tertiary syphilis the hair may be lost by ulceration of the scalp destroying

the whole skin structure. (5) *Crocker* states that a general thinning may be caused by seborrhœa, which is a not infrequent result of syphilis.

Pustular syphilides of the scalp are sometimes mistaken for **pustular eczema,** but differ in the presence of superficial ulceration and scarring. The crusts may require removal before a diagnosis can be made. The offensive odour of the pustular syphilide should excite suspicion, and the syphilitic lesions are generally more circumscribed than those of eczema.

Tertiary Syphilis.

Tertiary syphilis of the skin consists in the formation of cutaneous and subcutaneous gummata, rupial ulceration, and ulcerating gummata; also conditions resembling tylosis, or hardening and thickening of the epidermis of the feet.

The chief skin affections to be diagnosed from tertiary syphilis are lupus and tuberculous ulceration, lupus erythematosus, chronic ulcer of the leg, rodent ulcer, and leprosy.

The typical **syphilitic ulcer** is usually circular, with well-defined, sharply-cut edges, and a grayish floor. It often extends on one side, while cicatrization takes place on the other

side. Serpiginous ulceration is characteristic, and is caused by the confluence of several ulcers. Ulcerating gummata form deep excavations (the so-called ' crateriform ' ulcer).

Rupia may commence as a bulla, which rapidly becomes purulent and ulcerates, or as an ulcerating papule. In either case the ulcer rapidly spreads and forms scabs, which become heaped up in the characteristic limpet - shell form. The diagnosis of this condition cannot be mistaken.

Chronic ulcers of the leg are often difficult or impossible to diagnose; that is to say, given a chronic ulcer of the leg, it is difficult in many cases to say whether it is of syphilitic origin or not. In the case of multiple ulcers of the leg, some of the sores will probably be characteristic, and in any case they are probably syphilitic. But in the case of a single ulcer it is different. These chronic ulcers are often complicated with varicose veins or with chronic eczema, and induration of the tissues round the sore, so that all characteristic appearance is lost. Many such cases have no history of syphilis; but this is of little value, since we know that primary and secondary manifestations may be so slight as to escape notice by persons who are not of very

cleanly habits. Indeed, Professor *Adami** states that 'from analogy, as from clinical history and absence of any indications of the same, in sundry cases there may be an absence of the primary, cutaneous, or epithelial manifestations of syphilis.' It is therefore hopeless in many cases to get any clue from the former history of the patient, and the best course of treatment to pursue is to put all doubtful cases on a course of iodide.

Tuberculous ulceration is usually secondary to pulmonary, intestinal, or glandular tuberculosis. It is generally situated at the junction of the skin and mucous membrane of the mouth and nose, in cases of pulmonary tuberculosis, and at the anus in cases of intestinal origin. In glandular tuberculosis it complicates abscesses and sinuses in the neck. The characters of the ulcer are the ragged, irregular, undermined edge, and the base often covered with yellowish tubercles. These characters serve to diagnose tuberculous from syphilitic ulcers.

Lupus.—This disease, although now known to be tuberculous in origin, is one of such definite clinical characters that it is best considered separately. It usually affects the face in young people, and its chief characteristic feature

* *Montreal Medical Journal*, June, 1898.

is the presence of the so-called 'apple jelly' nodules. These are yellowish - brown nodules about the size of a hemp-seed, situated under the epidermis. Their true colour is best shown by pressing on them with a piece of glass, which renders the skin anæmic, and shows them up by contrast. This method, suggested by *Unna*, is of great value in the diagnosis of doubtful cases. Each nodule consists microscopically of the elements of a primary tuberculous nodule, and sometimes tubercle bacilli may be found in them.

The points which distinguish it from syphilis are the presence of the apple jelly nodules, the slow rate of growth as compared with syphilis, and the absence of the characters of the syphilitic ulcer, and of other manifestations of syphilis.

Lupus Erythematosus.—This might, by one not familiar with the complaint, be mistaken for tertiary syphilis of the face. It is also possible that tertiary syphilis of the nose might be mistaken for lupus erythematosus. However, there are wide differences between the two conditions. Lupus erythematosus usually begins as two symmetrical patches on the cheeks, which spread inwards and meet on the bridge of the nose, giving rise to the characteristic 'butterfly' appearance. Some cases begin on the nose and

spread towards the cheek. It also affects the ears and the scalp, and occasionally the nape of the neck and the hands and feet.

Tertiary syphilis of the nose is usually a gummatous infiltration of the skin, with or without ulceration. There is frequently rhinitis and ulceration of the mucous membrane of the nasal cavities. It is of a much more dirty brown colour than lupus erythematosus, and of much more rapid growth. It does not tend to spread to the cheeks, but rather downwards to the upper lip, and into the nasal cavities.

Rodent Ulcer.—This is a form of epithelioma. Its characteristics as given by *Jacob*, who first well described it, are the extraordinary slowness of its progress, the peculiar condition of the edges and surface of the ulcer, the comparatively inconsiderable suffering produced by it, its incurable nature unless by extirpation, and its not contaminating the neighbouring lymphatic glands. A good description of its mode of growth is given by Mr. *Malcolm Morris*:*

'The initial lesion is a small circumscribed nodule in the skin, flat and depressed in the centre, with unbroken cuticle, firm to the touch,

* 'Diseases of the Skin,' p. 558.

and of a dull brownish-red colour. It often remains for some years without undergoing any perceptible change; but at length the cuticle covering it is broken, and an ulcer with depressed granular centre and infiltrated border is formed. The ulcer becomes slowly larger and deeper; it infiltrates and destroys the subjacent tissues, attacking and replacing bones, as well as soft tissues. Sometimes it spreads superficially, with cicatrization of the centre, but usually the destruction of the parts beneath is more marked in the centre, so that a crater-like form results.'

The edge of the ulcer is undermined and 'rolled.' The surface is finely granular, and the discharge slight. It is almost always situated near the lower eyelid or the angle of the nose. It has also been found on the hand.

The diagnosis of rodent ulcer from syphilitic ulceration presents no difficulty, for the syphilitic ulcer will attain a size in a few weeks which a rodent ulcer only reaches in years. Also the scar of the rodent ulcer always breaks down, while the syphilitic ulcer scars at one part, and spreads at another. Moreover, the rodent ulcer is generally single, the syphilitic usually multiple.

Tylosis.—This is a condition in which the epidermis of the palms and soles becomes hard

and thickened. It is stated to be, as a rule, congenital, but may be the result of hyperidrosis. In the latter condition it begins round the sweat glands, and the epidermis is sodden as well as thickened.

A similar horny condition of the palms and soles may be met with in late secondary or tertiary syphilis. In this it is, however, usually combined with ulceration of the toes, and seldom occurs without some other evidence of syphilis.

Lepra.—Tubercular leprosy may be mistaken for syphilis. Leprous tubercles, however, have special seats of predilection, while those of syphilis are indiscriminate, and may occur in situations where leprous tubercles rarely, if ever, appear. Moreover, the tubercles of syphilis are not grouped like those of leprosy, and run a more acute course. In mixed leprosy ulceration of the palate and destruction of the nasal cartilages would suggest syphilis; but by this time there would be anæsthesia, which would practically exclude syphilis. Also other signs of leprosy would be present.

Drug Eruptions (Dermatitis Medicamentosa).—The most important of these is the **iodide rash.** This may take on

several forms. Sometimes it is a papular erythema, sometimes acniform, more often pustular. More severe lesions are bullæ, resembling pemphigus, and solid skin tumours, resembling gummata. Some cases have been so severe as to be diagnosed as malignant disease or leprosy. It is most important to bear in mind the possible skin eruptions caused by the iodides when giving a course of these drugs, since the very effects caused by the drug may be attributed to the syphilis for which the drug was given. This is especially the case in the form of eruption resembling gummata, and occasionally it is difficult to distinguish such an eruption from syphilis. The chief points, however, are the usually mixed nature of the eruption in the iodide rash, its rapid appearance, and the fungating nature of the tubercular skin lesion.

Cutaneous gummata (the **tubercular syphilide**) are usually more uniform, of a darker colour, and do not fungate; if they break down, they leave typical syphilitic ulcers, which the iodide tubercles do not. Another skin lesion produced by iodides is purpura, which was described by Dr. *Stephen Mackenzie*.

It not infrequently happens that iodide eruptions follow the use of small rather than

large doses of iodide, and they sometimes disappear when the dose is increased.

Copaiba Rash.—The characteristic form of rash following the internal administration of copaiba is an erythema consisting of small discrete erythematous patches, which are sometimes confluent. Vesicular and urticarial eruptions also occur. The copaiba rash may be mistaken for a secondary macular syphilide, and it must be remembered that these two eruptions may co-exist. The copaiba rash is, however, more uniform, of a brighter red colour, and not so widely distributed as the syphilide.

Mercury is also said to produce erythematous and scarlatiniform rashes, and sometimes more severe lesions, resembling pityriasis rubra, herpes, impetigo, etc. Such lesions occurring during a course of syphilis would be difficult or impossible to distinguish from the effects of the syphilis, and would have little importance beyond indicating temporary omission or alteration of the treatment.

Syphilis mixed with other Skin Affections.

It sometimes happens that a patient with some skin affection, such as eczema or psoriasis, contracts syphilis. In such cases the resulting

syphilide modifies the nature of the other disease, so much so that diagnosis is often difficult, and depends to a great extent on the results of treatment. A mixed eruption of this kind will become differentiated under anti-syphilitic treatment, bringing to view the simple disease, which had, as it were, become buried in the syphilide. A mixture of syphilis and scabies, or pediculosis, is often difficult to diagnose, each eruption being modified by the other.

CHAPTER V.

The Mouth and Throat.

The Mouth and Pharynx.—Primary sores may occur in the mouth and on the tonsils as mentioned in a previous chapter. Secondary affections of the mouth resemble those of the skin, but are not so numerous. **Erythema** of the fauces and soft palate is an early sign of secondary syphilis; in a typical case forming a well-defined arch including the pillars of the fauces, tonsils, and soft palate. **Mucous patches** are common in the mouth, and appear early. They form slightly raised whitish patches often surrounded by a red areola. **Ulcers** are common in the mouth and throat; they consist of roundish excoriations, with sharply-cut uneven edges. They are most common on the tonsils and fauces.

Tertiary affections of the mouth are usually found in the palate. Serpiginous ulceration may

begin in the gum and spread slowly over the mucous membrane. This form of ulceration is most common several years after infection, but may occur in the first year. Ulceration of the pharynx is not common till several years after infection. Tertiary affections of the palate occur in two forms: diffuse infiltration and gumma. The diffuse form may be limited to the mucous membrane, or may penetrate the submucous and muscular tissues. The superficial form causes thickening of the mucous membrane, which rapidly forms shallow ulcers affecting the velum and pillars of the fauces. These leave branching scars, but there is very little loss of function. The deeper form, on the other hand, leads to the formation of tough fibrous tissue, and causes changes in form in the velum and pharynx. Articulation and swallowing are impaired owing to the muscles being hampered with the fibrous growth. Indolent ulcers are produced which heal in some places while spreading in others, and the infiltration is gradually transformed into tough contractile fibrous tissue. The results of this process are pain, deformity, and loss of function. The voice becomes hoarse owing to extension of the disease to the larynx. The Eustachian tubes may be included, and the

process may extend to the posterior nares, leading to necrosis of bone. The ulcerating action may reach the base of the skull or vertebræ, and may cause post-pharyngeal abscess or spinal irritation. The nasal bones, sphenoid, palate, the basilar process of the occipital bone, or the bodies of the upper cervical vertebræ may be destroyed, and the dura mater may be attacked, causing epileptiform fits. Sometimes ulceration reaches the large bloodvessels, and causes dangerous hæmorrhage. Cases have been recorded where the internal carotid and vertebral arteries have been opened. The contracting scars may cause adhesion of the velum to the pharynx or to the base of the tongue, or contracting bands may form between the pharynx and the fauces. In extreme cases of pharyngeal stenosis, air can only reach the lungs through the mouth.

Circumscribed gumma is more frequent than diffuse infiltration, but the conditions may occur together. It usually occurs in the palate, forming a solid mass, which may grow as large as a hen's egg. If untreated the gumma ulcerates, forming a cavity with raised, thickened edges. The ulcer may enlarge by phagedena, or may heal, leaving a small hole in the soft palate.

The Tongue may be affected by primary, secondary, and tertiary syphilis.

Chancre.—This may occur in one of two forms: an erosion with a smooth base and induration, or an ulceration like the bowl of a spoon.

Mucous Patches.—These are typical when situated on the back or under the surface of the tongue, but when on the edge of the tongue they become ulcerated by the teeth. The mucous patch appears as a small grayish-white spot, which soon enlarges; several patches may coalesce. Mucous patches may ulcerate or heal spontaneously. They differ from leucoma in their grayish colour—leucoma is pearly white.

Tertiary Plaques are described by *Fournier*, and are said to precede deep fissures in old syphilitic tongues. They occur as raised, smooth, red patches of parchment-like texture.

Sclerosing Glossitis.—This is a cellular hyperplasia, resulting in fibrosis. Superficial fibrosis causes tertiary plaques, and is apt to break down into fissures and ulcers. Deep sclerosis leads to mammillation of the surface of the tongue similar to the surface of the liver in cirrhosis. The mucous membrane is deep red.

A rare variety is general sclerosis with enlargement, or syphilitic macroglossia. It is generally associated with gummata of the tongue.

Gummata.—These may be superficial or deep, and of various sizes. If superficial, the mucous membrane may become smooth. They are almost always multiple, and may remain unbroken, or soften and break down. Diagnosis has to be made from epithelioma. The deep gumma is more difficult to diagnose, and is more destructive. It is usually situated on the dorsum, and varies in size up to a walnut. When very deeply situated, it feels like a foreign body in the tongue. Gummata have a tendency to break down and cause ulcers, but occasionally remain unbroken for a long time.

The diagnosis of a deep gumma has to be made from fibrous or fatty tumours, or from early carcinoma. Innocent tumours are often polypoid; gummata never. The former are more defined and single, the latter generally multiple. Cancer is usually lateral, gumma generally median.

Tertiary Ulcers are usually preceded by gummata. They form deep ulcers with ragged edges and a sloughy surface. When single the diagnosis is difficult, and has to be made from

cancer and tubercle. The gummatous ulcer is generally dorsal, and hence differs from the others; the lymphatic glands also are not affected. A gummatous ulcer may remain indolent for a long time, and thus become phagedenic.

Superficial Glossitis or **Wandering Rash** generally occurs in children. It consists of smooth red patches on the dorsum, which spread into rings with a yellowish border. The rings intersect each other. *Fournier* regards many of them as parasyphilitic.

Leukoplakia or Leucoma.—This is a chronic superficial glossitis in the form of whitish patches. According to *Butlin* these are syphilitic in some cases, but may also be due to other causes, such as smoking, gout, or rheumatism. He states that in syphilitic cases specific treatment is useless. *Lerrede*, on the other hand, states that leukoplakia, which he regards as a parasyphilitic affection, may be cured by high doses of mercury.

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CHAPTER VI.

The Bones and the Joints.

Ostealgia.—In secondary syphilis pains occur in the bones, especially at night. The bones most often affected are the frontal bone, sternum, clavicle, ulna, and tibia.

Periostitis.—This may occur at an early period and affect the tibia, the bones of the skull, the ribs, the radius, ulna, and inferior maxilla. This early form of periostitis ends in resolution and leaves no thickening of the bone. *Mauriac* has recorded cases which appeared twenty days after the primary sore. When the periosteum is affected at the outlet of the nerve, as the supra-orbital, the pain is often very severe.

The most usual form of periostitis occurs later, and may occur several years after infection. In this form a single bone is generally attacked, and the result is the formation of a node. In inherited syphilis nodes may occur. These differ from those of the acquired disease in the following

points : in being usually multiple, in the absence of nocturnal pain, in spontaneous disappearance, and in not reacting to iodides.

Periostitis is due to a gummatous infiltration affecting both bone and periosteum. This may develop into syphilitic exostosis, or may suppurate, leaving a chronic ulcer and necrosis of the exposed bone. The bones, and also cartilages, may be affected by extension of the syphilitic lesions of adjacent parts. The most common examples of this are found in the bones of the hard palate and nasal passages, and in the cartilages of the larynx.

Osteo-myelitis may occur and lead to caries, necrosis, and suppuration.

Dry Caries is said to be peculiar to syphilis. This chiefly affects the frontal and parietal bones, and causes cavitation of the surface of the bone by absorption due to pressure by gummatous growth from the periosteum. A bone affected in this way shows the worm-eaten appearance seen in the skulls in museums. While this excavation is going on the adjacent bone undergoes a process of condensation, and the thickness is increased by the development of smooth hard bone on the surface. In this way a wall of bone is formed which may be felt through the scalp.

Gummatous deposits may occupy the hollows excavated by dry caries and may ulcerate, leaving rugged cavities in which the parts of the bone which have undergone condensation remain firmly adherent to the skull, without having enough vitality to close the hollow. In this way necrosed patches may remain open for many years. Syphilis produces fibrous tissue and new irregular bone; suppuration only occurs when there is necrosis.

When the bones of the cranium are affected there may be cerebral pressure or irritation causing convulsions, coma, or hemiplegia. The bones of the face may be extensively damaged, and a case is recorded by *Hutchinson* in which the whole of the upper maxilla was destroyed, except a small part of the antrum; the vomer, ethmoid, and all the turbinate and nasal bones. The same destructive effects may occur in late hereditary syphilis. Gummatous affection of the vertebræ has been recorded by several observers, and may cause collapse of the bodies and other symptoms of Pott's disease. Fragility of the bones may occur in congenital syphilis, and the long bones may be broken during parturition.

The joint affections in syphilis are best divided into early and late manifestations.

I. Early Joint Lesions.

1. **Arthralgia.**—This is the commonest affection and the only symptom is pain, the affected joint being neither swollen nor deformed. The seat of the pain is variable, and may be situated at the insertion of the ligaments and tendons, in the joint itself, or over the bony processes round the joint. The pain is worse at night, and may affect several joints at the same time, or pass from one joint to another. The larger joints are usually affected, but none are exempt. Under mercury the pain rapidly disappears, and recovery is the rule.

2. **Sub-Acute Arthritis.**—This appears in the early secondary period and affects chiefly the larger joints, sometimes two or more at the same time. The joint is swollen and the skin red and œdematous. There is some synovial effusion, and the synovial membrane is somewhat thickened. The pain is acute, worse at night, and unrelieved by rest. The affection is distinguished from acute rheumatism by remaining localized in one, two, or three joints, and not changing its seat as it does in rheumatism; also there is little or no fever. This affection is often difficult to diagnose from gonorrheal arthritis,

but the latter is usually more acute and painful, and there is generally a history of urethritis; also in syphilitic arthritis there are usually other secondary signs. Recovery under treatment is the rule.

3. **Hydrarthrosis.**—This is more common than is generally supposed, and often passes undetected. The only sign is effusion into the synovial sac. The knee-joint is most often affected, and the condition is often bilateral. Pain is slight and walking not much interfered with. There are no appreciable changes in the bones, but the muscles are slightly atrophied. Recovery is the rule under mercurial treatment, but occasionally a weak joint is left. This form is met with in the early secondary period, and is commoner in females. It may, however, occur in the late secondary or in the tertiary periods.

II. Late Joint Lesions.

These consist of two principal forms, one affecting the synovial membrane, the other the bones. Various combinations of the two forms may, however, occur.

1. **Synovial Form.**—This is always monarticular, generally affecting the knee, which becomes swollen and painful. There is effusion

in the joint, and gummatous nodules occur in the synovial sac. The bony extremities are usually unaffected. The function of the joint is not much impaired, but there is always some muscular atrophy. Under treatment rapid improvement takes place, but if the case is neglected the gummata may break down and set up acute arthritis.

2. **Osseous Form.**—Here the lesion is for some time limited to one of the bony extremities, the other joint structures being secondarily affected. The swelling of the joint is found by palpation to be due to thickening of the bone, involving both the epiphysis and the diaphysis, due to gummatous deposits in the bone which lead to rarefaction. The synovial membrane is not affected, and at first there is no effusion, although this may occur later. Pain is absent, and limitation of movement, if present, is due to the mechanical obstacle of the enlarged bone. Muscular atrophy is more marked than in the synovial form. Nocturnal pains in the joint usually precede the bony enlargement. If untreated the gummatous lesions in the bone may break down into the joint or form superficial sinuses. Diagnosis of this form of syphilitic joint disease has to be made from sarcoma,

callus formation after fracture, and tuberculous arthritis. The synovial form may be also mistaken for tuberculous synovitis. The possibility of the occurrence of a true tuberculous arthritis in a syphilitic patient must also be borne in mind. Syphilis appears to accelerate the course of tuberculous joint affections. Treatment in the early stages is usually successful, but when secondary affection of the joint has already occurred, or sinuses exist, surgical treatment may be required. Sometimes, after all signs of the disease have disappeared under medical treatment, severe pain persists in the end of the bone, and in such cases it may be advisable to trephine the bone deeply. This generally gives relief.

Hereditary Syphilis.

Joint affections in hereditary syphilis occur as late manifestations when the bones are in active growth. The lesion usually begins in the end of the bone in the neighbourhood of the epiphyseal cartilage. The joint is affected secondarily. There are three varieties of joint affections.

1. **Simple Osteo-arthropathy.**—This is the most common, and chiefly affects the knee. The onset is insidious, and the physical signs the

same as those of the osseous form of late-acquired syphilitic joint disease.

2. **Bilateral Hydrarthrosis.** — This consists in the development of simple chronic joint effusion with very little thickening of the synovial membrane.

3. **Deforming Osteo-arthropathy.** — This is characterized by marked deformity of the joint due to malformation of the epiphysis which becomes swollen into an irregular shape.

Osteophytic outgrowths are formed, and these interfere mechanically with the function of the joint, leading to muscular atrophy and contraction. These forms of joint disease must be distinguished from the lesions, causing separation of the epiphyses and called by *Parrot* 'Syphilitic pseudo-paralysis of the newly born,' and not confounded with those cases of suppurative epiphysitis occurring in congenital syphilis, but not due directly to the specific virus.

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CHAPTER VII.

The Nervous System.

Syphilis of the Nervous System generally occurs in the late secondary or tertiary periods, but occasionally in the first few months. The lesions are often multiple, so that the symptoms produced result from more than one form of disease. When the lesions are bilateral they are seldom symmetrical, often appearing at different times, and varying in nature. The middle cerebral artery and its branches are particularly liable to become occluded in syphilis, hence the frequency of hemiplegia, with or without aphasia, in syphilitic subjects.

The Brain.

1. **Meningitis** may occur in an acute or chronic form, the latter being nearly always secondary to syphilis of the bone or to localized gummata. The inflammation may be a pachymeningitis, or a leptomeningitis by extension to

the dura mater, arachnoid, and pia mater. Sometimes a hæmorrhagic meningitis may develop after a pre-existing meningitis, or primarily as a result of capillary hæmorrhage. The brain may also become the seat of encephalitis, due to inflammation of the neuroglia, which begins with infiltration and sclerosis and ends in atrophy by compression of nerve fibres. The lesion is more often secondary to meningitis or endarteritis.

2. **Vascular Lesions.** — The most important of these is endarteritis obliterans, which may lead to three events. The progressive constriction of the vessel causes a diminution in the blood-supply of the part in the case of a terminal artery. Thrombosis may occur and cause permanent obstruction in the case of a terminal artery. Finally, vascular changes may lead to miliary aneurysm, and weakness of the walls may result in cerebral hæmorrhage.

In the circulation of the brain there are two distinct territories—the base, supplied by the basal arteries which go to the white matter and the nerve-roots; the cortex, supplied by vessels from the pia mater. A lesion of one of the terminal arteries of the base may not be noticed at first, but later on there is a progressive loss of nutrition and function, and, finally, necrosis and

softening. Endarteritis of the cortical vessels has not much effect, owing to the free collateral circulation.

3. **Gummata.**—These may develop in any part of the brain. The symptoms are not characteristic, and are similar to those of any other tumour. When the gumma is recent it is composed of gelatinous transparent tissue formed of small cells and vessels. When old it becomes hard, cartilaginous, or caseous.

In the dura mater the gumma causes dry caries of the adjacent bone. When it is situated in the subarachnoid space, not only the membranes, but also the cerebral substance, vessels, and nerves take part in the process. This leads to cerebral softening. The gumma may be situated at the base, and then usually affects the chiasma, the infundibulum, the crura cerebri, and the pons Varolii. The syphilitic lesion, whether situated on the convexity of the brain or at the base, may lose its nodular character and become meningitic. The syphilitic lesions of the brain are rarely met with alone, but are usually combined.

Symptoms.—The symptomatology of cerebral syphilis varies according to the form and situation of the lesion. For the most part there

is nothing characteristic in the symptoms. Thus, syphilitic meningitis runs the same course as idiopathic meningitis, and gumma may simulate the symptoms of a cerebral tumour. On the other hand, endarteritis alone or combined with gumma may present characteristic symptoms. It is a well-known fact that most of the symptoms of cerebral syphilis, both sensory and motor, have not the character of a complete lesion, but are always more or less incomplete. When an apparent cure is followed by a relapse, this relapse itself is not typical. One only rarely meets with a true paralysis or anæsthesia, but there is often paresis, paræsthesia, and a condition of weakness bordering on paralysis. Another characteristic sign is the slow evolution, the affection being preceded for some time by prodromata. These phenomena are explained by endarteritis and by the soft nature of the gumma, which exercises a variable pressure on the nerves. The unilateral character and the progressive gravity of these lesions is explained by the gradual diminution in the calibre of the vessels, which causes weakening of the cerebral functions.

The premonitory symptoms commence with headache, with nocturnal exacerbations, which

may last for several years. They are increased by pressure and accompanied by insomnia, giddiness, loss of consciousness, diminution in memory and intelligence. These symptoms may be isolated or combined, giving rise to crises which increase in frequency and intensity. Finally, one of these crises is followed by grave cerebral phenomena. These form three different types.

1. **Psychic Affections with Epilepsy.**—After one of the prodromal crises an attack of epilepsy suddenly develops. This attack may be complete, but may not be accompanied by loss of consciousness. The attacks are repeated and are followed by excitation, diminution of memory and intelligence, which may go on to complete paralytic dementia. Paresis gradually develops, speech is modified, becoming slow and hesitating. Paresis may be unilateral and limited to one extremity. All these phenomena develop with alternating periods of improvement and relapse. If no treatment is undertaken the epileptiform attacks increase, intelligence is more and more obscured, and the patient becomes comatose and dies. Post-mortem, gummata and endarteritis are found in the convexity of the brain.

2. **Apoplectic Attacks with Hemiplegia.**—To the prodromal signs is added sudden paralysis of a cranial nerve. The third nerve is often affected, causing ptosis, strabismus, diplopia, defective accommodation, and occasionally paralysis of the soft palate. These paralyses may be accompanied by hyperæsthesia and contracture. In other cases the cerebral signs begin with an attack of apoplexy, which is provoked by external causes such as alcoholic or sexual excesses. The patient either loses consciousness or simply suffers from vertigo and somnolence. This attack is followed by paralysis, which may be unilateral and accompanied by difficulty in speech. The paralysis may subside and the patient recover his normal condition, but there may be cerebral complications and another attack may follow. The somnolent condition may last for days or weeks, and urine and fæces are voided involuntarily. Appropriate treatment may lead to cure; otherwise, coma and death may supervene. In fatal cases gummata are found at the base of the brain together with endarteritis and softening of the optic thalami and corpora quadrigemina.

3. **Psychoses with Paralytic Dementia.**—When the psychoses are syphilitic they are not typical, but comprise a number of

other symptoms, such as nocturnal headache, unilateral weakness, paralysis of some of the cranial nerves, and epileptiform attacks. Epilepsy in syphilis is distinguished by being most often accompanied by other symptoms. In the intervals between the attacks there may be ptosis, hemiplegia, etc.

The Spinal Cord.

Inflammation of the cord and meninges may be acute or chronic, and is generally due to extension from the bone.

1. **Gummata.**—Gummata develop usually in the periphery of the cord in the pia mater and internal surface of the dura. Sometimes they form distinct small tumours, sometimes diffuse infiltration of the meninges.

2. **Sclerosis.**—This occurs as an induration in the cord limited to a few millimetres, and having its origin in the dura mater. When it occupies the external surface of the dura it may cause periostitis of the vertebral canal. When situated on the internal surface it causes adhesion of the membranes to the cord. There is proliferation of the neuroglia and destruction of the medullary sheaths. The process probably begins as a sclerotic meningitis.

3. **Myelitis by Compression.** — This is secondary to syphilitic exostosis in the vertebral canal. As the process begins in the meninges, the first symptoms are those of irritation. According to the seat of the lesion, pain occurs in certain regions of the cord, and is aggravated by pressure. These pains radiate to the limbs, and are neuralgic in character. They implicate several nerve trunks and are complicated by paræsthesia, tingling and numbness of the extremities, without alteration in cutaneous sensation. Motor troubles consist in spasm and contracture of several muscles. All these phenomena pursue an irregular course, and have exacerbations and remissions. When they become intense paralysis may supervene, but this paralysis may affect the opposite limb or the other half of the body, depending on the seat of the lesion. There may be paralysis of both lower limbs. When the lumbar region of the cord is affected the sphincters are paralyzed. It is interesting to note that the sensory troubles do not correspond to the motor. There is rarely complete anæsthesia. Variable signs, the appearance and disappearance of the patellar reflex and the accidental combination of sensory troubles with paralysis and atrophy of muscles, are always suggestive of syphilis. The same applies to the

appearance of cerebral symptoms, ocular paralysis, etc. When paralysis of the sphincters remains untreated the patient is obliged to remain in bed, and cystitis may supervene. When the lesion is in the cervical region of the cord all the muscles of the thorax are paralyzed, and death may take place from asphyxia or pneumonia. Specific treatment may effect a cure even in advanced cases. But the cure is often incomplete, because the cicatrices may produce secondary descending degeneration.

Peripheral Nerves.—Neuritis is seldom primary, but is more often secondary to pressure excited by a syphilitic growth. The nerve may be compressed to a ribbon, and atrophied. Gummata of the nerves may be primary or secondary. When primary, they consist of a gummatous infiltration at a certain part of the nerve, in which the normal nerve elements disappear. In recent cases the nerve is thickened and pulpy; in old cases it is indurated, caseous, or fibrous. When gummata are secondary they penetrate into the nerve substance. This is only possible in the case of nerves with a thin sheath, such as the cranial nerves. In the cranial nerves simple cases are rare, for the purely nervous phenomena are almost always complicated by cerebral symptoms.

The third nerve is the one most often affected. The facial and abducens nerves may also be paralyzed. Syphilitic lesions of the cranial nerves are characterized by their slow evolution, one muscle being first affected and followed by the others. The optic and trigeminal nerves are sometimes affected.

Prognosis and Treatment.—Sir *William Gowers* points out that in syphilis of the nervous system specific treatment acts only on the specific process, and has no direct influence on the secondary changes. For instance, in syphilitic disease of a cerebral artery, treatment will have no influence on the consequent thrombosis and softening, nor on the characteristic symptoms which are due to these effects. It is true that under treatment symptoms may pass away, but this may occur in cases of embolism from heart disease, whether medicine is given or not. The permanent symptoms depend on the part of the brain affected.

Again, in the case of a meningeal gumma of the cord, the effects are the same as with any other tumour comprising the cord. Secondary degeneration may follow, but certain fibres may regain their function when the pressure is removed by absorption of the gumma by treatment.

In the cerebral meninges inflammation tends to spread rapidly, and this applies to syphilitic meningitis. In the spinal cord acute myelitis is sometimes met with, and the inflammation runs the same course as in cases not of syphilitic origin. The morbid process is interstitial, and the nerve elements suffer secondarily. Local chronic inflammation of the cerebral cortex has other effects due to damage to the nerve elements, and in the gray matter there may be considerable change of function after the inflammation has subsided. Here stimulated liberation of nerve energy is replaced by spontaneous discharge, causing convulsion.

Prognosis hence 'depends on the extent to which, after the removal of the specific disease, the simple processes on which the symptoms depend can pass away' (*Gowers*). In all tissues there is a tendency to recovery, if actual destruction has not taken place.

In arterial obstruction there is rapid and permanent destruction of tissue, and function can only be restored by compensation on the part of the other cerebral hemisphere, or in the degree in which initial damage exceeds destruction. But in the case of slow compression recovery depends on its degree and duration. Pressure leads to

secondary inflammatory changes which go on to cicatrization if the pressure is long continued. Paraplegia, due to compression, may be complete for a month, but recovery may be perfect. But if paraplegia has been complete for six months, recovery is only partial, even after removal of the cause.

Treatment.—The result of treatment depends on its duration. The new growth diminishes in size by disintegration of the new tissue elements, but the older cells become fibrous, and treatment promotes this cicatricial change in tissue elements which are too mature to undergo disintegration. In this way constriction may be produced, which may render permanent, or even increase, the effects of the original disease. This change may cause occlusion of arteries and constriction of nerves. This fact, as *Gowers* points out, is not well understood, and as long as symptoms continue, treatment may be pushed to no purpose.

Gowers does not consider it good to give iodide and mercury together in full doses, except for a short time in an urgent case, because of the elimination of the mercury by the iodide. He considers inunction the best means of administration of mercury, and prefers the oleate to the usual preparation of blue ointment.

With regard to the duration of treatment, *Gowers* advises 'that specific treatment should be energetic, brief, renewed, but not continuous. It should stop at the end of eight weeks or so, and be renewed after two, four, or six months, and the patient should have three or four weeks' treatment with iodide every four months during the first year after each true specific symptom, and every six months for the next three or four years.' In support of this view he quotes a case where a patient developed a gumma of the cord which caused death while under treatment with iodides. This shows that treatment may lose its power if continually administered. The course of syphilis, assuming it to be microbial, suggests that the germs may long remain latent and develop from time to time under certain unknown influences, and that treatment has no effect on the germs when latent, but only where these are developing. The most thorough treatment sometimes may fail to prevent future developments of the disease. 'The only reasonable explanation of this seems to be that the germs are indestructible. They cause no symptoms until some influence induces and permits their development. After a given outbreak there may be none left, and treatment then seems to have

cured the disease. In another case there may be many, and then recurrence occurs after the same treatment. Hence, whether syphilis is or is not incurable as a constitutional malady, it is certainly one of the cure of which we can never be sure.' Thus the germs may become acclimatized to the presence of the iodide and develop in spite of it. *Gowers* maintains that after eight weeks of treatment the specific disease is at an end, and all that remains is the result of secondary effects.

Parasyphilitic, or post-syphilitic, affections, of which tabes and general paralysis are the most common forms, are regarded by *Gowers* as primary degenerations, probably caused by toxins, and he considers them not influenced by iodide, and often made worse by mercury. But 'these toxic degenerations sometimes develop before the true constitutional disease is at an end, while gummata and gummatous inflammation still occur, for which specific treatment is needed. The important fact is the combination of symptoms produced, and the difficulty of discerning their causes. In early distinct tabes, paralysis of the ocular muscles may occur, which may be of the nature so common in tabes, or may be due to a syphiloma of the nerve or specific neuritis. Still more perplexing are the cases in which

specific spinal pachymeningitis has coincided with true tabetic degeneration. If germs are deposited in the system which develop from time to time, under the influences of which we know nothing, it is easy to understand that the organismal processes, truly syphilitic, due to later germs, should coincide with degenerations which are the effect of toxins the result of earlier broods.'

The Internal Ear.

In syphilis a severe form of deafness sometimes occurs, which *Fournier* calls '*surdité foudroyante.*' The chief characteristics of this affection are (1) an extremely rapid development, taking only a few weeks, or even days; (2) a resistance to all therapeutic measures; (3) the absence of any appreciable lesion by otoscopic examination. A remarkable point is that this form of deafness usually occurs in mild cases of syphilis, and may develop in the secondary stage. In an autopsy made by *Moos* on a case which died of some other complaint, there was found some cell infiltration in the cellular tissue between the bone and the membranous wall of the vestibule, being most marked in the organ of *Corti*. The auditory nerve was normal. Hence, the lesion appears to affect the labyrinth; but a single post-mortem

examination is not sufficient to draw a conclusion from. The deafness is nearly always permanent, but *Fournier* has recorded a case which recovered under calomel injections, combined with iodide internally.

Hutchinson has also recorded a cure. The deafness usually affects both ears, and is preceded by tinnitus and giddiness. There is early loss of hearing through the cranial bones. It is rare in the acquired disease, but more common in inherited syphilis, where it usually appears about the eighth year—the time of occurrence of keratitis. This affection is one of the common causes of deaf-mutism.

Syphilis and Insanity.

'Of all the causes of insanity, none writes with such a broad and indelible hand as syphilis' (*Mott*). This is at first sight a startling statement, but it is made by one who has had exceptional opportunities of studying the results of nervous diseases.

Syphilophobia.—This is a form of hypochondriasis in which a patient who has suffered from syphilis has a constant fear that any subsequent ailment is due to his former disease. Also he may fear that anything which touches his person may convey the disease to others.

Epilepsy.—According to *Savage*, syphilitic epilepsy more often leads to progressive weak-mindedness than to attacks of mania. Various forms of insanity, such as mania, melancholia, or dementia may be caused by syphilitic tumours or arteritis. *Savage* describes two chief varieties of cases. In the first there has been some severe local disease causing sensory perversion. Thus a patient with double optic neuritis may have impaired vision and become suspicious, thinking that persons whom he can only see indistinctly are going to injure him. In the second variety, syphilitic tumours of the brain may cause epilepsy, which often gives rise to local paralysis, such as strabismus or ptosis. In some cases without epilepsy the mind may become deranged owing to syphilitic arterial disease.

Hence 'syphilis may produce moral perversion with hypochondriacal symptoms; it may act directly on the brain by means of tumour or impeded circulation. Finally, it may act by reducing the whole vitality of brain and body, or by interfering with recovery.'

General Paralysis.—*Savage* does not think that syphilis plays such an important *rôle* in the causation of general paralysis as other writers maintain. He states that 'syphilis may

produce mental and bodily disorders hardly to be distinguished from general paralysis, and probably it also causes one form of the disease.' He further remarks that syphilitic arteritis may cause dementia indistinguishable from general paralysis, especially as antisyphilitic treatment often fails; also that gummata in the motor areas of the brain may cause symptoms resembling general paralysis. These cases are marked by the greater frequency of headache, strabismus, ptosis, and hemiplegia.

On the other hand, *Fournier* considers that there is a history of syphilis in most cases of general paralysis, and probably ignored syphilis in the remainder. The most recent investigations on this subject were conducted by *Mott* at the London County Asylums. He found distinct evidence of syphilis in 75 per cent. of the cases. He also mentions that *Erb* in Germany found syphilis in 90 per cent. General paralysis is dealt with again in the chapter on Parasyphilis.

Idiocy.—Actual syphilitic lesions are rare as a cause of idiocy. But that idiocy is due to the hereditary taint is more than probable; for 'insanity in the father or mother may produce idiocy in the son or daughter' (*Savage*). If syphilis is a frequent cause of insanity, it follows

that idiots may often be the offspring of parents with syphilitic insanity.

However, *Langdon Down* says that there are not more than 2 per cent. of idiots with signs of inherited syphilis, and *Fletcher Beach* puts the proportion at only $1\frac{1}{2}$ per cent. The latter author is of opinion that the disease leads more often to juvenile dementia about the time of puberty than to idiocy or imbecility.

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CHAPTER VIII.

The Eye and its Appendages.

Acquired Syphilis.—Chancres may occur on the eyelids, and these are always hard syphilitic sores, never soft, and non-infecting. They generally involve the palpebral conjunctiva. Phagedena of the eyelid is practically unknown. During cicatrization of the chancre the canaliculi may become obstructed, causing epiphora; also symblepharon may result from the chancre spreading to the ocular conjunctiva. The pre-auricular gland is always enlarged and painless.

Diagnosis of chancre of the eyelids has to be made from rodent ulcer, epithelioma, lupus, chalazion, and hordeolum. The absence of enlargement of the pre-auricular gland will help to exclude these diseases. In the time that an epitheliomatous ulcer causes enlargement of the gland, a chancre will have healed, and secondary

syphilis appeared. In suppurating chalazion and styes the gland may be affected, but in such cases it is swollen, red, and painful. The only ulcer likely to be mistaken for a chancre is the tuberculous, but the latter is never indurated. *Juler* says that treatment of chancre of the eyelid should not be commenced till the diagnosis is confirmed by the development of secondary syphilis. It, however, appears to me to be wiser to begin treatment with mercury in all doubtful cases, considering the damage that may occur during cicatrization of the chancre.

Gummata sometimes develop in the tarsal cartilage or in the skin over it. In the cartilage the gummata do not break down early, and may be mistaken for meibomian cysts.

The Lachrymal Apparatus.—*Juler* has seen two or more cases of enlargement of the lachrymal glands apparently due to syphilis. In one case sarcoma was diagnosed, but a cure was effected with mercury and iodides. The lachrymal passages may be obstructed by syphilis. The puncta and canaliculi may be obliterated by cicatrization of the chancre or of a tertiary ulcer. A gumma of the caruncle may cause epiphora by pressure on the canaliculi, and the lachrymal sac may be opened by an

ulcer. In secondary syphilis secretion may accumulate in the lachrymal sac from inflammatory swelling of the nasal duct or from mucous patches. Tertiary syphilis may obliterate the canal by chronic periostitis.

The Orbit.—Gummata may form on the outer part of the orbit. Periostitis may occur about the optic foramen and cause retro-ocular neuritis, which is characterized by rapid failure of vision, usually in one eye only, pain or tenderness, absence of early ophthalmoscopic changes, a central scotoma, and a tendency to recovery.

The Cornea.—Inflammation of the cornea, although common in hereditary syphilis, is rare in the acquired disease.

The Sclera.—Gummata may occur in the ciliary zone of the eye, or at the back of the eyeball.

The Iris. — Iritis is the most common affection of the eye in acquired syphilis. It may be plastic, serous, or gummatous. Plastic iritis may be due to gout, rheumatism, or gonorrhea, and, according to *Juler*, there is no pathognomonic sign of syphilitic iritis. The chief signs of iritis are redness round the cornea, contracted and inactive pupil and loss of colour of the iris,

pain, photophobia, and impaired vision. Pain is less pronounced in syphilitic iritis, but exudation is greater than in iritis due to gout, rheumatism, or gonorrhea. Syphilitic iritis rarely recovers, but the other forms have a tendency to do so. Syphilitic iritis only occurs in about 4 per cent. of cases, usually from three to six months after infection. Gummatous iritis is a term applied to cases where there are deposits of yellow nodules of lymph near the inner margin of the iris. This form usually leaves adhesions to the capsule of the lens (synechia). There is a variety of iritis accompanied by small multiple growths on the iris, which may be mistaken for gummatous iritis. This is called granuloma of the iris, and is said not to be syphilitic. The growths are pale, translucent gray deposits, which clear up without leaving adhesions. Gummatous is distinguished from tuberculous iritis by the orange-coloured nodules at the pupillary margin, the intense redness of the ocular conjunctiva, pain and tenderness of the eyeball, photophobia, and lachrymation. The tuberculous growths are white, and situated chiefly at the outer border of the iris.

Juler thinks the term gummatous incorrect, and would restrict it to a tertiary syphiloma of

the iris. The question is, however, one of degree rather than of kind. The **treatment** of iritis consists in the energetic administration of mercury, preferably by inunction, and the instillation of atropin drops locally.

The Choroid.—Syphilitic choroiditis may be disseminated, diffuse, macular, or peripheral. Any one of these varieties may be combined with another. In choroiditis the retina is always involved. The affection is a late secondary one. In disseminated choroiditis the individual lesions are seldom seen during the period of exudation, owing to the associated hyalitis. The vitreous is turbid from inflammatory products. On examining the front of the vitreous with the ophthalmoscope, myriads of dots can be seen floating about. Under antisyphilitic treatment the eye clears up, and we see scattered about small white areas of exposed sclera, surrounded by a ring of black pigment. In some places these may coalesce and produce a large atrophic area, with a pigmented margin. Wherever the pigmented epithelium is destroyed, the rods and cones of the retina are probably rendered functionless.

The Retina. — Retinitis is usually associated with choroiditis (choroido - retinitis).

Another form is that which mimics pigmentary retinitis. In both choroido-retinitis and the pigmentary retinitis of syphilis the disease is so insidious that the lesion is more an interstitial fibrosis than an active inflammation. There are atrophic changes in the papilla, but no preceding papillitis. Syphilis may be the cause of albuminuria by causing interstitial nephritis; also lardaceous disease of the kidney may be attended by retinitis or retinal hæmorrhages. Hence, tertiary syphilis may be the cause of renal retinitis. Also in the secondary stage of syphilis a catarrhal nephritis has been observed, accompanied by retinitis.

Hereditary Syphilis.

Keratitis. — Interstitial keratitis is the commonest affection of the eye in hereditary syphilis. It is characterized by diffuse cloudiness of the cornea. The disease usually affects both eyes, but not simultaneously. Interstitial keratitis must be distinguished from the superficial keratitis which precedes ulceration of the cornea, and from pannus associated with granular lids. In superficial keratitis photophobia is intense, and the surface of the cornea is dull.

In interstitial keratitis the surface of the cornea is uniform and glassy. In pannus the redness is formed by superficial vessels coming from the conjunctiva. In interstitial keratitis the coloured patch ('salmon - patch') consists of very fine deep-seated vessels, which are only visible with a lens. The inflammation is quiet and chronic, and photophobia is usually slight. The cornea never ulcerates, nor does suppuration occur. Interstitial keratitis is caused by syphilis in most cases, but it is also said to be caused by tuberculosis. The **treatment** consists in the instillation of atropin drops and the use of neutral tinted glasses. Internally mercury should be given. Later yellow oxide of mercury ointment may be used for the eye.

Iritis. — This may occur in hereditary syphilis before or after birth. Syphilis is the essential cause of congenital iritis.

Choroiditis.—This may occur at any time from six weeks to two years. It presents the same features as in acquired syphilis. Glaucoma may follow choroido-retinitis in both acquired and hereditary syphilis.

Cataract.—If irido-cyclitis is followed by atrophy of the ciliary body the lens becomes cataractous and undergoes calcification. In cases

of congenital iritis small eccentric white patches form in the anterior capsule of the lens. A posterior polar cataract may also occur. Cataract may also occur in acquired syphilis.

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CHAPTER IX.

Malignant Syphilis.

By **malignant syphilis** is meant a severe form of the disease, but authorities do not agree as to what is the special cause of malignancy, neither are they unanimous in regard to definition.

Tarnowski divides malignant syphilis into three groups: (1) syphilitic sores affected with secondary inoculation by pyogenic organisms; (2) 'syphilis præcox,' with gummata; (3) syphilis severe because of its localization.

Neisser would only admit the second group under the head of malignant syphilis, and he excludes such cases as sores secondarily affected with pyogenic organisms. *Neisser's* opinion is best shown by the following quotations:

'By the term "malignant syphilis" we understand a severe form of the disease characterized by certain symptoms differing rather in their nature than in mere severity from the usual

forms of the malady. It will be understood, therefore, that every case of severe syphilis must not be included under the designation of malignant. For example, when syphilis is rendered a dangerous affection on account of the relations of the organs attacked, or by reason of some previously existing morbid condition, the term "malignant" is not appropriate. The term "syphilis gravis" is more suitable in such forms of the disease.' 'The fact of malignancy depends on a difference in the resistance of the individual, not merely on the quantity of the virus introduced.'

The characters of malignant syphilis given by *Neisser* are as follows:

1. Pronounced toxic constitutional symptoms, such as fever, anæmia, cachexia, loss of weight, insomnia, arthralgia, and headache. Occasionally epileptic fits, coma, and transitory disturbance of the motor and co-ordinating functions.

2. Extensive irregular lesions of the mucous membrane of the mouth and nose.

3. Pleomorphic character of the skin lesions, eruptions succeeding one another more quickly, so that papules and ulcers in various stages occur at the same time.

4. Simultaneous occurrence of mild and severe

lesions—*e.g.*, papules of mucous membrane, with severe ulcers of the head and face.

5. Early development of ulceration at a time when the roseola usually appears.

Neisser states that intermediate forms between ordinary and malignant syphilis are to be met with.

'Malignant syphilis must be regarded as a secondary manifestation of the disease, not only on account of the early appearance of the lesions, but also on account of their multiplicity and their manner of distribution, and on account of the severe constitutional symptoms.'

Most authors have hitherto applied the term to tertiary lesions, and *Tarnowski* applies it specially to cases characterized by the early appearance of tertiary lesions.

The ulcers of malignant syphilis, according to *Neisser*, differ from the usual tertiary ulcers in (1) their rapid development, (2) the absence of serpiginous outline, and (3) the simultaneous presence with them of typical secondary affections.

Concerning the causes of malignant syphilis, *Neisser* states there is no reason to suppose it is due to a larger quantity of virus or to a more powerful quality in the virus; because, first, the

source of infection may not have been a malignant case; and, secondly, a patient affected with malignant syphilis need not give this form of the disease to another person. Hence, malignancy is due to a 'peculiar susceptibility of the affected person,' characterized by a rapid destruction of syphilitic granulomata, and an excessive reaction of the constitution against the toxin. He denies that it is due to debility of the subject, or to such diseases as gout, scurvy, diabetes, nephritis, or alcoholism.

With regard to pyogenic mixed infection as a cause, *Neisser* says: 'Neither the bacteriological investigation of those local lesions, nor the therapeutic results obtained by the use of any of the antiseptic applications, give any support to the doctrine that the malignant phenomena are the result of such a mixed infection.' The only instances comparable to such infection, *Neisser* says, occur in severe congenital syphilis with suppuration.

With regard to malignant cases being caused by mercury, *Neisser* denies that there is any relation between malignancy and treatment, although malignant cases are made worse by much mercury, and, as a rule, such cases take mercury badly.

Some authors have attributed malignancy to extra-genital situation of the primary sore, such as on the tonsils, tongue, etc., and others attribute it to phagedena of the primary sore. *Neisser* denies both these statements, and thinks the localization and progress of the primary sore have no effect on the malignancy. Phagedena of the primary sore he considers a symptom of malignancy and not a cause.

It is, he says, difficult to explain the diminution of malignant syphilis during the last four centuries (for he admits that malignant syphilis, as he defines it, is now uncommon). In the celebrated outbreak of syphilis at Naples, in 1494, the cases were supposed to be mainly malignant; however, *Buret* and *Proksch* showed this to be incorrect, the majority of cases being not malignant, although malignant cases were more common than at the present day. This idea was chiefly due to the different nomenclature of the older writers, who described nearly all the eruptions as 'pustulæ' or 'ulcera.'

Neisser attributes the diminution in malignancy of syphilis to the following causes: (1) greater care and system in the treatment; (2) use of antiseptics; (3) improvement in sanitary conditions; (4) congenital immunity by

hereditary transmission. As generation after generation is affected, a certain degree of transmitted immunity is acquired, which diminishes the severity of the disease. Also the virus itself may become milder by cultivation on unsuitable soil, and also by the effects of mercury upon it. The last view is supported by the facts recorded by *Epstein*, who found many cases of malignant syphilis among Jews, who were formerly very free from syphilis. He accounts for this by the individuals of a community generally free from syphilis tending to show a malignant type when attacked, owing to the virus having a virgin soil to develop in.

As regards treatment in malignant syphilis, *Neisser* points out that mercurial treatment often fails, and the patients usually take mercury badly. In such cases he recommends tonics, such as iron, arsenic, strychnia, and quinine; also sea bathing. The prognosis, he thinks, is finally generally good.

Haslund agrees, on the whole, with *Neisser* in his definition of the disease, but limits it even further. He applies the term 'malignant syphilis' only to cases which soon after infection develop extensive cutaneous ulcerations, having no tendency to spontaneous healing, and some-

times becoming phagedenic. Such ulcerations occur with other secondary phenomena, such as papular eruptions, etc. The skin is often the only part affected, and complications such as iritis and periostitis are rare. *Haslund* agrees with *Neisser* in excluding all tertiary syphilis. He distinguishes between malignant syphilis, as described above, and 'galloping syphilis,' which is characterized by an acute course of the whole disease, affecting any organ with early tertiaries. He thinks 'syphilis ulcerativa præcox' a better term than 'syphilis maligna.' As regards the etiology, *Haslund* has not much to say, except that he considers the idea of mixed infection of the sores to be only a theory.

In venturing an opinion on this subject. I think, in the first place, that the term 'malignant' is totally out of place in such cases as *Neisser* and *Haslund* describe. If any term is required, *Haslund's* suggestion of 'syphilis ulcerativa præcox' is better; but, as *Neisser* himself admits, cases are met with intermediate between ordinary syphilis and 'malignant syphilis,' and, this being the case, why employ any special term at all? For my part, I think with *Tarnowski* that such severe cases of syphilis as seem to merit any such word as 'malignant'

are usually tertiary sores infected with pyogenic organisms, or sores occurring in debilitated subjects, or those suffering from some other constitutional disease, such as tuberculosis, Bright's disease, diabetes, etc. In other cases, I think the cause may be found in injudicious or excessive use of mercury, and in the absence of local antiseptic treatment. The latter will explain the severe cases in the outbreak at Naples, where antiseptics were unknown, and where dirt was plentiful. *Neisser* contradicts himself when he attributes antiseptic treatment as one of the causes of diminished malignancy in syphilis of later times, after having previously stated that there was no proof of the sores being infected secondarily.

We all know that cases of syphilis vary much in intensity and character in different individuals and at different times, and that this is probably partly explained by the transferred immunity acquired after successive generations have been affected. If all the causes which I have mentioned as including most cases of severe syphilis (constitutional diseases, alcohol, debility, improper treatment or no treatment at all, local pyæmic infection, etc.) are excluded, and we are reduced to a certain type of rapid secondary

ulceration, which some of us would probably call rupia or early tertiary syphilis, why not do away with this also, and abolish the term altogether? After all, it is mainly a question of degree and not of kind.

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CHAPTER X.

Parasyphilis.

Our knowledge on this subject is chiefly due to *Alfred Fournier*, who points out that syphilis not only causes 'specific' lesions, but is also responsible for a number of morbid manifestations, not syphilitic in *nature*, but syphilitic in *origin*. These he terms *parasyphilitic* affections. They are of great interest, and appear to be more numerous than is generally supposed, and occur both in connection with acquired and hereditary syphilis. In the former they include neurasthenia, hysteria, tabes, general paralysis, epilepsy, and muscular atrophy. In hereditary syphilis they comprise general dystrophic troubles, malformation and arrests of development, rickets, hydrocephalus, epilepsy, general paralysis, and hereditary tabes.

The characters of parasyphilitic affections are: (1) they are not necessarily confined to syphilis, but may occur independently of antecedent

syphilis ; (2) they are not influenced by mercurial or iodine treatment. An obvious objection may here be raised, for if these affections are not necessarily connected with antecedent syphilis, and are not influenced by specific treatment, what have they to do with syphilis ? To this *Fournier* answers that for a symptom to occur without syphilis does not imply that syphilis is not capable of appropriating this symptom and making it a manifestation. For instance, syphilis is often complicated by fever, anæmia, neuralgia, etc., which are not necessarily specific signs. Also, it does not follow that a lesion is not of syphilitic origin because it is not cured by antisyphilitic remedies, for syphilitic lesions themselves do not always yield to treatment.

Acquired Syphilis.

Neurasthenia.—In a certain number of cases syphilis is a cause of neurasthenia. It occurs in the secondary period, especially in girls who are predisposed to it. It may also occur in the second or third year, but seldom later. It manifests itself by a general depression of the nervous system, headache, vertigo, neuralgic pains, insomnia, partial or symmetrical analgesia, peripheral algidity, asthenia, etc. The **neuras-**

thenic headache is characterized by its persistence and rebelliousness to treatment. It is usually occipital, occurs in the daytime, and is increased by intellectual occupations. In the **syphilitic headache** the pain is more intense, and usually worse at night. It reacts usually to syphilitic treatment, but if it persists, may lead to epilepsy, apoplexy, or hemiplegia, whereas the neurasthenic headache persists indefinitely without further complications. Syphilophobia also may occur with neurasthenia, the patient having his whole thoughts concentrated on the disease, and every trifling ailment being attributed to syphilis.

The prognosis of neurasthenia is good in the early cases, later ones are more chronic, and may leave permanent damage to the nervous system. The treatment is the same as for neurasthenia of non-specific origin—viz., hydrotherapy, bromides, electricity, massage, etc.

Hysteria.—Syphilis may originate an attack of hysteria, or may revive previous attacks. Parasyphilitic hysteria may occur in the secondary or tertiary period. Hysterical paralysis is diagnosed as in other cases by the presence of other signs of hysteria, such as contracted visual field, loss of pharyngeal reflex, loss of taste, etc.

Tabes.—This is generally recognised as of syphilitic origin. *Fournier* finds antecedent syphilis in nine-tenths of the cases, and considers that there has been ignored syphilis in the rest.

General Paralysis.—The older statistics of general paralysis are of no value, because syphilis was not thought of as a cause, and hence was not looked for. Later and more reliable figures give from 80 to 90 per cent. with antecedent syphilis. The reasons for regarding general paralysis as of syphilitic origin are: (1) it is much less common in women, and, according to *Fournier*, syphilis is less common in women in the proportion of 1 to 10 — since 1860 he collected 15,100 cases of syphilis in men and 1,400 in women; (2) the comparative rarity of both syphilis and general paralysis in certain communities—they are rare among country people as compared with town dwellers; they are also rare in certain districts in France and Ireland; (3) the relative frequency of syphilis in general paralysis and other insanities—*Regis*, from the combined statistics of nine authors, found syphilis in 65 per cent. of general paralytics, and only in 10 per cent. of other cases of insanity; (4) the coexistence of lesions of syphilis and general paralysis; (5) the frequent association of general

paralysis with tabes ; (6) the occurrence of syphilis in juvenile general paralysis. It thus appears that syphilis is the primary cause of general paralysis, and that other causes, such as predisposition and excesses, are secondary. *Fournier* further suggests that general paralysis and tabes are different expressions of the same morbid state, one affecting the brain and the other the spinal cord. His arguments in favour of this are: (1) Motor troubles of inco-ordination are the same in both ; (2) ocular paralysis, sphincter troubles, reflex and sensory affections, occur in both ; (3) apoplectic seizures with monoplegia, hemiplegia, aphasia, etc., may occur ; (4) the same with trophic affections, such as perforating ulcer ; (5) both occur at maturity and in persons otherwise healthy ; (6) they are more rare in the female ; (7) they sometimes coexist in the same patient ; (8) sometimes one verges into the other ; (9) pathologically they both consist in degeneration of nerve fibres and proliferation of neuroglia, resulting in sclerosis ; (10) both have a tendency to extend—tabes towards the brain, and general paralysis towards the spinal cord.

Epilepsy.—Sometimes in the course of syphilis epilepsy develops which differs from the epileptic form of cerebral syphilis. It is charac-

terized by the absence of other cerebral signs; by persistence without association with other morbid phenomena; by long duration; by not reacting to specific treatment; by the convulsions being general and never Jacksonian, as in cerebral syphilis. The epileptic form of cerebral syphilis, on the other hand, is associated with other cerebral signs, and usually reacts to treatment.

Parasyphilitic epilepsy may occur in the form of grand or petit mal, or both. It is characterized by sudden invasion without any apparent cause, such as excess, fatigue, or emotion. Grand mal usually occurs only a few times during the first year, and then diminishes; petit mal is commoner, lasts longer, and may occur ten or twenty times a year. The symptoms of both are the same as in ordinary epilepsy, but the time of occurrence is later—viz., between thirty-seven and forty-eight years of age, and ten to twenty years after the onset of syphilis. The only treatment of any avail is by bromides.

Hereditary Syphilis.

Hereditary parasyphilis manifests itself by a dystrophic influence on the child. This leads to arrest of growth, either partial or general, to mal-

formations, such as spina bifida, cleft palate, club-foot, microcephalus, hydrocephalus, etc., and a morbid predisposition to other maladies, such as tuberculosis. The teeth are usually affected, both by late development and by various malformations. Arrested development may affect the whole body and cause stunted growth, even to dwarfism. It is probable that dwarfs are caused by syphilis. On the other hand, special organs, such as the testicles, ovaries, uterus, or breasts may be affected, causing retardation of puberty, or 'infantilism.'

Rickets.—This was considered by Parrot to be a manifestation of syphilis, but his views did not gain general acceptance. However, rickets is frequently found in the subjects of hereditary syphilis, and probably the latter is a predisposing cause.

Hydrocephalus often occurs in hereditary syphilis, and a hydrocephalic child is usually born after several abortions.

Congenital spastic rigidity, and certain cases of **meningitis,** are also attributed to the results of hereditary syphilis. Mental defects up to idiocy also occur. Finally, evidence goes to show that hysteria, epilepsy, tabes, and general paralysis may be caused by hereditary syphilis as well as by the acquired disease.

Leredde disputes *Fournier's* opinion with regard to tabes and general paralysis. He concludes that they are of a syphilitic nature, and not parasyphilitic; also that they may be curable by mercurial treatment. He states (1) that mercury has not been given in a regular manner or in sufficient doses; (2) that the syphilitic lesions of tabes and general paralysis involve secondary lesions, and symptoms at first curable become permanent; (3) that histologists have stated that certain lesions were not syphilitic when their nature was unknown. He regards tabes and general paralysis, not as morbid entities, but as connected with a slow evolution of the syphilitic process. Between them and the typical forms of cerebral and spinal syphilis there are intermediate forms. *Leredde* has collected cases of both tabes and general paralysis which appear to have been cured or at any rate improved.

Lemoine published six cases of tabes treated with injections of benzoate of mercury up to 6 centigrammes daily. One case was cured and the others improved. He also treated six cases of general paralysis with benzoate injections. Three were said to be cured and three improved. *Leredde* prefers injections of benzoate or biniodide of mercury, of which 8 centigrammes can be given

daily. Iodine has no effect on sclerotic lesions and in general paralysis is dangerous, owing to the possibility of apoplexy.

Ogilvie, in an address delivered before the International Congress of Medicine at Madrid, discussed the subject of parasyphilis. He remarks that, while tabes and general paralysis have been shown to be connected with syphilis, nothing of the kind can be said of any other so-called parasyphilitic affections, such as neurasthenia, hysteria, epilepsy, etc. Syphilis may in a neurotic person provoke neurasthenia, but so may many other complaints. He also points out that nervous disorders in secondary syphilis described by *Fournier* ('Traité de Syphilis'), for which treatment was recommended, were identical with those described as parasyphilitic and not amenable to treatment. 'Such incongruities are the natural outcome of the capricious principle underlying the division between syphilis and parasyphilis.'

As regards heredo-syphilis, the number of affections attributed to parasyphilis is very large. 'There are inflammatory processes, progressive degenerations, dystrophic conditions, dyscrasias, scars, tumours, predispositions, anything from a slight anomaly to monstrosity, from intellectual weakness to complete absence of the brain.'

Every pathological condition which is not rapidly and intensely benefited by mercury found in a heredo-syphilitic subject (or one suspected of heredo-syphilis, for the reason that one of the parents or grandparents has at one time suffered from syphilis) is registered as parasyphilitic. In this way many cases have been collected in which congenital syphilis, or a history of acquired syphilis, has been found co-existing with nearly every pathological condition. But co-existence is not causal connection.

Concerning malformations, *Ogilvie* remarks that if they were caused by hereditary syphilis we should expect to find them more frequently where syphilis has been raging endemically for several generations. The recent investigations of *During* in Asia Minor have not confirmed this.

Under different names, such as quaternary syphilis, pseudo-syphilis, post-syphilis, etc., exactly the same idea has at different times appeared in the history of syphilography. What is new in the modern teaching of parasyphilis is the enormous extension given to the deteriorating influence of syphilis upon the race. 'The theory of parasyphilis is bound to lead to direct opposition with facts, because the premises upon which

it is reared are fallacious, and because it is based on a wrong notion of specificity.'

In reviewing the above opinions, it is difficult to come to any decided conclusion regarding the vexed question of parasyphilis. I am inclined to agree with *Ogilvie* that the subject has been overdone, but we must bear in mind that in many affections attributed to the results of syphilis we have as yet no better explanation to offer. It appears to me that the distinction between syphilis and parasyphilis is one of degree rather than of kind. As regards treatment it is true that we cannot cure a cicatrix of the nervous system, such as exists in old-standing tabes, but in the early stages there appears no reason why antisyphilitic treatment should not succeed. All cases of tabes and general paralysis should be given a trial with severe mercurial treatment, for the danger of mercurial poisoning is slight compared with the hopeless condition produced by these diseases.

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CHAPTER XI.

Reinfection and 'Syphilis d'Emblée.'

It was formerly believed that syphilis could be only contracted once in a lifetime—*i.e.*, that one attack conferred permanent immunity. More recently, however, many competent observers have recorded cases where syphilis was acquired twice, and we must now regard the occasional occurrence of second attacks of syphilis, or reinfection, as an established fact. In order to prove a second infection, it is necessary for the patient to pass through two distinct attacks of **secondary** syphilis. The development of a chancre only is not conclusive evidence of reinfection.

Hutchinson reported a case where syphilis was contracted in 1860, and was well treated with mercury. In 1865 the patient again contracted a hard sore, followed by secondary syphilis. An interesting fact in this case is that the patient had two attacks of small-pox in four years.

Another case is mentioned by *Hutchinson* where the patient had three attacks, the first fourteen years, the second nine years before the last. *Berkeley Hill* reported the case of a surgeon who contracted the disease in the ordinary way, recovered, and had two healthy children. Eleven years afterwards he contracted a chancre on the finger, which was followed by secondary symptoms. Many other cases of reinfection have since been published, and I have myself seen two at the London Lock Hospital. As the notes of these cases had been kept on each occasion, and the identity of the patients was vouched for by the nurse who had seen them on both occasions, they must have been genuine cases of reinfection.

With regard to reinfection in patients who have had inherited syphilis, although this, no doubt, in most cases confers immunity, cases have been recorded which show that reinfection is possible. *Hutchinson* reported a case where the evidence showed that a young woman had probably had the inherited disease in infancy, and the acquired at the age of twenty.

Concerning the relative severity of the two attacks of syphilis, we should naturally suppose that the second attack would be milder than the

first. This is probably true in the majority of cases, but the latest writers on this subject state that the second attack is not necessarily less severe than the first. The interval between the two attacks is very variable, and lately a case has been recorded by *Mansell-Moullin*, where it was only two and a half years.

It thus appears that the immunity conferred by an attack of syphilis is a very uncertain quantity, and, no doubt, depends on many factors, such as the severity of the attack, the condition and constitution of the patient, and the quality of the treatment he has undergone. An interesting point arises with regard to the curability of syphilis. As we have seen in the chapter on parasyphilis, syphilis may be followed by remote sequelæ. Now, if a parasyphilitic affection occurs, the case in question cannot be regarded as having been cured. On the other hand, it has been said that the occurrence of reinfection proves the curability of syphilis. It would be better to say that it shows that immunity has come to an end. It is easy to imagine that reinfection might occur before the phenomena of parasyphilis, due to the first attack, appeared; but reinfection does not preclude the possibility of the occurrence of parasyphilis, for this is due to damage to the tissues

after the immediate effects of the virus have passed away.

Syphilis d'Emblée.

By **'Syphilis d'Emblée'** is meant syphilis in which no primary sore occurs. The word 'emblée' means at the first onset, or 'right off.' *Fournier* is doubtful whether it is an established fact, but admits that in some cases no chancre is found. *Hutchinson* says: 'We are obliged, then, to admit that occasionally syphilis may occur without any primary sore having been discovered by careful, or even by skilled, search.' *Adami* is more dogmatic on the point, and remarks, 'It is not even necessary to have any first stage or cutaneous chancre. We know well that in every case of infection the infectious agent must make an entry from without into the tissues, and in a great number of cases we can discover the point or points of entry, and at such point or points we find evidence of primary local infection, whether on the skin or mucous membranes, and this local infection is strictly comparable with the cutaneous syphilitic chancre. But we also come across cases in which there is a complete lack of evidence of such superficial primary infection; we may find, for instance, the

cervical or mesenteric glands affected with tuberculosis, without a sign of tuberculosis of the pharynx, or tonsils, or intestinal mucosa; cases which usually, though mistakenly, are spoken of as "cryptogenetic." What occurs in other diseases must at times occur in syphilis.'

Jullien has recently reported two cases of the kind accidentally contracted by a surgeon and his assistant in the course of an operation. Each surgeon wounded himself with a needle. Nine days afterwards secondary syphilis was found in the patient. The surgeon developed secondary syphilis thirty days after the operation, the wound on the finger having previously ulcerated. The assistant also developed secondary syphilis thirty-three days after the operation, but there was no reaction at the site of the wound. These cases confirm the views that the blood of syphilitic patients is infectious, and in this case the blood was infectious nine days before the secondary eruption appeared. In these cases the virus was directly introduced into the blood, so that the lymphatic glands had no chance of acting as a barrier. This accounts for the early development of secondary syphilis, the primary incubation stage being absent.

I have myself observed a case where syphilis

was contracted in the usual way, but no chancre was ever found, although the patient was under observation for some time before secondaries appeared.

We must hence, I think, admit that occasionally syphilis may be contracted without any primary sore, both by direct inoculation with the blood and by the usual infection through the skin or mucous membrane.

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CHAPTER XII.

Syphilis and Marriage.

There are few more difficult questions for the medical man to decide than that of marriage in syphilitic subjects. On the one hand, we know that a large number of persons who have had syphilis marry, and bring up healthy children with no trace of the disease. On the other hand, cases are only too common where husbands have infected their wives after several years of apparent cure, and have brought into the world children suffering from hereditary syphilis. It is therefore important to endeavour to form some rules which will guide us in giving advice as to when a syphilitic subject may or may not marry.

The disastrous results which may follow syphilis in marriage are shown by the following cases reported by *Tarnowski*. Three men contracted syphilis six, five, and four years respectively before marriage, and were apparently

cured at the time of marriage. The 3 marriages resulted in the birth of 22 children. Of these only 1 grew up healthy; 5 were premature; 3 died of meningitis; 2 were imbecile; 2 idiots; 1 'degenerate'; 1 of weak intellect; 1 insane; 1 epileptic; 2 hysterical; 1 a deaf mute; and 2 hydrocephalic. The parents were in easy circumstances, so that the question of hardship did not arise.

Another case, showing the result of neglected treatment, is mentioned by *Fournier*. A young woman married a man with secondary syphilis. She contracted the disease, and suffered from severe phagedena of the face, which destroyed the nose, upper lip, and palate, converting the woman into a veritable monster. The husband did not seek medical advice for fear of arousing suspicion!

There is, fortunately, a brighter side to the picture, for *Fournier* has collected eighty-seven cases of marriage among syphilitic subjects without any infection of the wife, and resulting in the birth of 156 healthy children. Syphilis must therefore not be regarded as an insurmountable obstacle to marriage, but, except in rare cases, as a temporary cause of prohibition.

Conditions of Admissibility of Marriage.—*Fournier* lays down the following conditions: (1) Absence of actual lesions; (2) advanced stage of the disease; (3) a period of immunity after the last signs; (4) the quality of the disease must not be severe; (5) treatment must have been prolonged.

Fournier gives three or four years after the onset of the disease as the minimum time before marriage can be sanctioned, and even then only if the above conditions have been fulfilled. *Hutchinson* gives two years after the onset of the disease.

The first condition—the absence of lesions—requires no comment. However, *Cullerier* has reported some cases to show that the fœtus may escape infection even if the father is in a contagious state.

Case 1.—A man married six months after contracting syphilis, and after marriage developed secondaries. During this time the wife became pregnant, and gave birth to a healthy child, which had no signs of syphilis during the next five years.

Case 2.—A man married two weeks after secondaries appeared. His wife became pregnant, and gave birth to a healthy child, which was free from any sign eight years later.

I mention these cases to show the difficulties which surround us when dealing with the problems of syphilis—difficulties which are often overlooked by the medical man who reports the case. In the above two cases, what proof is there that the syphilitic husband was the father of the child? It is quite possible that the wife was impregnated by another man free from syphilis. The possibility of such occurrences will always be a stumbling-block in the study of syphilis.

The second point, the date of the disease, is important. The more recent the disease in the husband, the greater the chance of infection. Relapsing erosions are especially dangerous, consisting as they do of slight lesions affecting the penis or mouth—the most dangerous regions.

There is a gradual decrease and final extinction of the power of infection of infants by syphilitic parents. The first pregnancies result in abortion: later ones end in the birth of syphilitic children; after a time healthy children are born. This is known as '*Diday's* law of decrease.' Exception has been made to the universal truth of this law, owing to the fact that a syphilitic child is sometimes born after a healthy preg-

nancy ; but here again we have the same difficulty to contend with, viz., the possibility of another father. *Fournier* mentions 20 cases of marriage within the first two years of the disease, with the following disastrous results: 19 of the wives became infected, and there were 28 pregnancies, which resulted as follows: 13 abortions, 6 died soon after birth, 6 were born with syphilis, 3 were born healthy. A mortality of 67 per cent.—a truly appalling result.

The third point, the period of immunity since the last signs of syphilis should coincide with the suspension of treatment. According to *Fournier*, this should be from one and a half to two years, during which time no treatment has been given.

The fourth point concerns the severity of the disease. In cases of severe syphilis, the period of probation should be prolonged ; but, on the other hand, it is a mistake to relax the other rules because of the benign character of the disease, for it is well known that cases originally benign may be followed by severe later symptoms. This is well shown by *Fournier's* analysis of eighty-four cases of locomotor ataxy, no less than seventy-four of which occurred after

benign syphilis. Such results are probably due to insufficient treatment, owing to the benign nature of the disease originally.

The last point deals with treatment. *Fournier* advises treatment for three or four years by the intermittent method. He argues that a chronic disease should be dealt with by chronic treatment.

In conclusion, if the candidate for marriage satisfies all the above rules, marriage may be permitted; but if all the conditions are not satisfied, marriage should be postponed. Each case, however, must be judged by itself, and the probabilities carefully considered.

Treatment after Marriage. — If a man develops signs of syphilis after marriage, the contagious lesions should be cauterized with the acid nitrate of mercury, and a severe course of mercurial treatment undertaken. Pregnancy should be avoided.

If the wife is pregnant, but has no signs of syphilis, the course to adopt is a matter of opinion. *Ricord* was against intervention, and preferred to leave the result to Nature. *Fournier* advises intervention in most cases. If the wife has had previous abortions, mercurial treatment should be given. If it is a case of first pregnancy, the course of action depends on the age

and quality of the disease in the husband, and the treatment he has undergone. If the conditions are bad in the husband, mercury should be given to the wife in small doses.

If the wife is contaminated and pregnant, treatment of the mother often prevents abortion, and may lead to the birth of a healthy child. *Fournier* states that there is no proof that mercury, given in moderate doses, ever causes abortion.

The treatment of the wife is often a cause of much domestic trouble and anxiety to the doctor. The husband naturally wishes to keep the disease secret, and if the wife does not know the nature of the disease, she naturally wishes to know the reason of such prolonged treatment. Under these circumstances, much diplomacy is required. In many cases, however, the wife sooner or later becomes aware of the state of affairs.

Suckling.—If the mother is syphilitic, she should suckle her syphilitic child. The consequences of giving a syphilitic child to a wet-nurse may be disastrous. The infant may infect the nurse; the latter may infect her own child, her husband, and other children. Thus several families may become infected from one infant.

The question of suckling becomes a matter of

opinion when the mother of a syphilitic child has no signs of syphilis. The best rule is for the mother to suckle the child unless she has cracked nipples, or the child has sores about the mouth. In no case should the child be given to a wet-nurse.

Prince Morrow, in his recent admirable book, comes to the following conclusions with regard to pre-matrimonial syphilis :

'1. The two qualities of syphilis which emphasize its important relations to marriage are its contagiousness and susceptibility of hereditary transmission.

'2. These qualities are not impressed upon the syphilitic organism indefinitely. As syphilis advances in its evolution, the virulent principle gradually becomes extinguished.

'3. Specific treatment also exerts a marked attenuating and corrective influence upon the diathesis.

'4. Syphilis does not therefore constitute an absolute permanent obstacle to marriage ; it is only a temporary bar, which may be removed by time and treatment.

'5. The decision of the question of the admissibility to marriage of a man with syphilis or with syphilitic antecedents imposes a grave responsibility upon the physician.

'6. The physician should consider the proposed marriage solely as a sanitary problem, the only correct solution of which is that the man should not marry so long as he is capable of infecting his wife or of transmitting his disease to his children.

'7. The elements which serve for the determination of this question are based partly upon our knowledge of the pathological laws of the disease, and largely upon the results of clinical experience.

'8. The division of syphilis into secondary and tertiary periods, or that based upon anatomical forms and processes, does not furnish a safe criterion for determining the contagious or non-contagious character of the lesions.

'9. The chronological completion of the secondary stage does not always mark the definite disappearance of the virulent principle: clinical experience shows that late lesions may be exceptionally, but none the less certainly, the source of contagion.

'10. The precise date in the evolution of the diathesis when the syphilitic organism undergoes that radical transformation which marks the limit of its contagious or transmissive power, does not admit of mathematical expression.

'11. It is probable that this limit varies in different cases, and that many circumstances contribute to advance or deter it.

'12. The type of the disease, the constitutional peculiarities of the patient, the presence or absence of certain conditions which are recognised as factors in the gravity of syphilis, the treatment employed, all exert a modifying influence.

'13. All these elements should be taken into consideration in deciding upon the admissibility of a syphilitic man to marriage. Each case should be studied upon its individual merits.

'14. The advanced age of the diathesis, a prolonged immunity from specific accidents, and sufficient specific treatment, are the surest guarantees of safety.

'15. The arbitrary designation of a period of three or even four years as perfectly safe for a syphilitic man to marry, with or without treatment, and irrespective of the character of the diathesis, is unwarranted by science or the teachings of experience.

'16. While in the majority of cases the contagious activity of syphilis and its hereditary transmissibility cease after the third or fourth year, yet well-authenticated observations prove in

the most positive manner that these qualities sometimes continue much longer, and may be manifest in the fifth or sixth year of the disease, or even later.

'17. The aptitude of syphilitic parents to procreate diseased children may persist after the cessation of all specific manifestations. The contagious stage of syphilis is not, therefore, the exact measure of the duration of hereditary influence. This is especially true of maternal hereditary.

'18. The curative influence of specific treatment in causing the organic lesions to disappear, as well as the functional disorders created by the syphilitic virus, is well established.

'19. While the preventive action of specific treatment is less pronounced than its curative action, it is hardly conceivable that a treatment which exhibits such incontestable virtue in causing the accidents of syphilis to disappear should not be capable of dominating and destroying the diathesis if sufficiently prolonged.

'20. The value of specific treatment in suppressing, holding in abeyance, and finally correcting the hereditary influence of syphilis may be accepted as well established by clinical experience.

'21. Clinical observation shows that when there is a cessation of all specific manifestations after the completion of the secondary stage, and this exemption is prolonged during a period of twelve to eighteen months, they are not liable to recur.

'22. When the syphilitic diathesis has been subjected to the double depurative action of time and treatment during a period of four years, in the vast majority of cases it is scientifically safe for the syphilitic to marry.

'23. This rule is based upon a calculation of probabilities. Medical certainty is not mathematical certainty, and a longer period of delay would not afford additional guarantees of safety to the wife and prospective children.

'24. In deciding upon the fitness of a syphilitic man for marriage, the risks to personal health of the prospective husband from his disease should always be considered.

'25. A menacing character of the diathesis, and especially the existence or history of certain symptoms which point to the implication of the brain, nervous system, or other important organs, constitute an express permanent contraindication to marriage.'

Conclusion.

With regard to the period of time for the sanction of marriage, we see that *Hutchinson* gives two, and *Fournier* three or four years after the onset of disease. It appears to me that if a patient is not free from the virus in two years he will probably not be so in four years or more. I think that the best plan is that of *Hutchinson's*, to allow marriage after two years, in the absence of symptoms, *but* to inform the patient of the possibilities which *may* occur. The only other alternatives would be (1) to prohibit marriage altogether; (2) to prohibit pregnancy. Pregnancy cannot be avoided with certainty, but many precautions may be taken, the details of which it is unnecessary to enter into here.

We must remember that we are giving advice to an individual, and are not authorized to attempt an improvement of the human race by the suppression of syphilis. Such a course of procedure would involve the non-marriage of those afflicted with cancer, tubercle, and other diseases.

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CHAPTER XIII.

Syphilis and Life Assurance.

This important subject was discussed by *Byrom Bramwell* in a paper read before the Edinburgh Royal Medico-Chirurgical Society, December 3, 1902.

The many questions to be determined are: (1) Does syphilis tend to shorten life, not merely in individual cases, but considering syphilitic individuals in a mass? and (2) if so, to what extent? Unless these questions are settled with some degree of accuracy it is impossible to give a rational and scientific answer to the question—(3) On what terms shall assurance companies accept syphilis? Considering the extreme frequency of the disease, it is remarkable how divergent are the views of physicians on the subject, some thinking that syphilis should in no way influence the rate of premium, and others holding a very opposite view. Most medical advisers refuse to accept cases of primary and

secondary syphilis, and bad cases in which tertiary symptoms have appeared, while they accept at ordinary rates cases of syphilis which have been effectively treated, and in which a sufficient time has elapsed to render the further appearance of symptoms unlikely. This practice is entirely illogical, on account of the possibility of later nervous symptoms developing. In *Bramwell's* opinion syphilis shortens life, and a person who has suffered from it should not be taken as a first-class life, as it is quite impossible to foresee the risks. The only exceptions are the cases in which the disease has been contracted very many years previously, or in certain cases of short-term policies. Syphilis may kill and shorten life in different ways: (1) by typical tertiary lesions, particularly those affecting the nervous system; (2) post or parasyphilitic lesions, of which tabes, general paralysis of the insane, and aneurysm are the most important, with, in addition, such other parasyphilitic manifestations as aortic regurgitation, cirrhosis of the liver, possibly cirrhosis of the kidneys, insanity, etc., and probably more subtle degenerative changes which diminish the resistance and vitality of syphilis. Dr. *Bramwell* showed statistical tables of his own cases, which confirmed those published by *Naunyn* in showing

that tabes, general paralysis, and aneurysm occurred most frequently during the first ten years after infection. During this period the greatest extra premium is required, during the second decade a less one, while during the third decade very little extra may be required. At present insurance statistics are of little or no value in showing whether syphilis shortens life. In Dr. *Muirhead's* analysis of the mortality in the Scottish Widows' Fund from 1888-1894, no death was ascribed to syphilis. It may be taken for granted that nowadays primary syphilis is never fatal, though in the past it was so in some cases, from sloughing, sepsis, etc. Secondary syphilis is rarely fatal, but may indirectly lead to death by suicide on account of the mental depression it sometimes causes. In the same way the mental and physical depression may indirectly predispose to infection with tubercle. Practically, deaths due directly to syphilis are always caused by its tertiary manifestations. These used to be considered of late occurrence, but this is now known not to be the case, and in the great majority of instances they develop within ten years of infection—in many within the first year or two. The frequency of tertiary symptoms may be taken at about 10 per cent. of all cases of syphilis, and in

an average case of tertiary syphilis life is shortened by about ten years. Only a small part of the mortality of the disease, however, is due to the tertiary lesions: most is due to tabes, general paralysis, aneurysm, cirrhosis of the liver, etc. Tabes is due, in at least 75 per cent. of cases, to syphilis, and in a series of cases in which the exact date of the infection and that of the onset of the symptoms was known, it appears that in 15 per cent. of the cases these arose within five years, in 40 per cent. within ten years, and in 67 per cent. within fifteen years after infection. In thirty-two fatal cases of tabes the average duration of life from the onset was 8·8 years, and in the seventeen of these in which the date of infection was known, it was found that the expectation of life at that date exceeded the actual duration by an average of fifteen years. As regards general paralysis, taking the mortality in the Scottish Widows' Fund, and assuming that the infection was contracted at the same average age—twenty-seven—the average diminution of life was nineteen years. Aneurysm is very often due to syphilis, also aortic disease. The combination of gout and syphilis is very unfavourable, and if an alcoholic man is also syphilitic he is much more likely than a non-syphilitic to suffer

from cirrhosis of the liver. The far-reaching character of the disease must profoundly alter the tissues and render them more liable to the inroads of disease. Such is seen when prolonged worry induces the onset of general paralysis in a syphilitic. Waxy disease is also due on many occasions to syphilis. In conclusion, *Bramwell* is of opinion that syphilis undoubtedly shortens life, but how far it is now impossible to say. Since the mortality is always indirect, a statistical inquiry by assurance offices would be long and difficult, but would be possible. The main points to be investigated are: (1) the influence of mercurial treatment in preventing tertiary and parasyphilitic lesions; (2) whether the severity and persistence of the secondary symptoms afford a guide as to the probability of subsequent tertiary and parasyphilitic lesions; (3) when a history of syphilis is disclosed, the importance, for the purpose of assurance of regarding (*a*) the physique and constitutional tendencies, (*b*) the family history, (*c*) the health of the proposer's children, (*d*) the habits, occupations, circumstances, and surroundings of the proposer.

On the other hand, *Hyde* says: 'It is unfair to charge an extra risk for the insurance of syphilitic applicants otherwise in sound health and

insurable. The syphilitic applicant for life insurance should be examined with a view, not so much to his syphilitic history, as to his condition with relation to all the other items making up a satisfactory risk. In other words, if he has a good family history, a sound constitution, excellent habits, and has reached, but not passed, a satisfactory age, his expectancy of life is probably that of other individuals in similar conditions without risk on account of syphilis' (*J. N. Hyde, Medical Examiner*, April, 1898).

CHAPTER XIV.

Hereditary Syphilis.

Concerning the mode of transmission of syphilis to the fœtus, *Adami* remarks that the idea of the syphilis bacillus entering the spermatozoon is absurd, because the latter consists only of flagellum and nucleus and cannot ingest foreign bodies. Also, if the syphilitic virus gained an entry into the unsegmented ovum, it must surely cause destruction of the ovum. Fœtal syphilis must originate at a later date, and although syphilis in the parents may have an effect on the ovum and sperm, and lead to constitutional disturbances in the offspring, the syphilitic lesions in the fœtus are not inherited but are congenital —*i.e.*, acquired *in utero* after conception.

If the mother has no signs of syphilis, and the child is syphilitic, the virus has entered the maternal organism, and failed to cause a lesion at the point of entry, but it has reached the fœtus through the placenta. In support of this

view is the frequency with which the liver is affected in congenital syphilis. In the fœtus the liver is the first organ to receive blood by the umbilical vein.

The essential difference between congenital and post-natal syphilis is that in the former the virus passes directly into the blood; in the latter dissemination is delayed. The second stage of acquired syphilis is the same as the first of congenital syphilis. There are many proofs that a mother may bear a syphilitic child from a syphilitic father without showing any sign of syphilis, and *vice versâ*, the father showing no sign of the disease. *Coutts* attempts to find if there are any differences in the child in infection from either parent. The difficulties here are, first, that the mother may have been infected in the ordinary way, although showing no symptoms; in this case we cannot assign to either parent the share in the production of syphilis in the child. Secondly, the assumption that every mother bearing a syphilitic infant is herself infected is, according to *Coutts*, not proved.

Infection of the Child by the Father.—*Kassowitz* puts the limit of time at ten to fourteen years, and also says that if there is a remote chance of the mother being

contaminated, inheritance by the offspring is a certainty. *Henoch* puts the time limit at twenty years. Cases as late as this are rare, but it is possible that transmission is only limited by the child-bearing period. Yet it is certain that time alone may abolish the capability of the father to transmit the disease. *Coutts* is of opinion that the reason why successive pregnancies become less contaminated is not necessarily due to attenuation of the virus in the man, but to some product absorbed by the mother from the fœtus.

The effect of treatment in limiting transmission is more marked than that of time alone; but where the man alone is infected there is no proof that treatment will attenuate the virus. Mercury has not the power of attenuating the virus, according to *Coutts*, but can prevent transmission at the time of procreation. *Fournier* quotes a case where a man married in the first year of syphilis, continued treatment, and a healthy child was born; but after leaving off treatment he infected his wife and the next child.

Infection from the Mother, the father being free, is undoubted. *Kassowitz* recorded 40 pregnancies, the mother alone being

syphilitic, resulting in 18 abortions, 5 early deaths, and 17 living children. *Fournier* puts the mortality at 68 per cent. when both parents are syphilitic, 28 per cent. when the father only is affected, and 60 per cent. when the mother only is affected. So far statistics show that maternal syphilis is more harmful to the child than paternal, and infection from both parents the worst.

Effect on the Fœtus of Syphilis contracted by a Mother during Pregnancy.—Even now this point is not settled, although the possibility of infection of the fœtus is accepted. *Diday* stated that if the mother is infected during the first forty days or after the seventh month of pregnancy, the child escapes; but if during the interval, the child has syphilis. *Ricord* remarks, 'If the infection of the mother takes place during the last three months, it is not certain that transmission is possible.' *Hutchinson* doubts if a woman would be likely to go to the end of pregnancy who had syphilis in the early part of it. Most of his cases were when the mother was infected late in pregnancy. *Fournier* uses the term 'congenital syphilis' for cases infected in this way, restricting 'inherited syphilis' for cases acquired at the time of conception. *Kassowitz* denies transmission to the fœtus

at whatever time of pregnancy the mother is infected, and says there is no proof in any case where the mother is infected during pregnancy and produces a syphilitic child that the syphilis was not from the father at the time of conception. But if it is admitted possible that a woman may carry a syphilitic fœtus *in utero* for several months and then become infected, this is equivalent to an exception to *Colles' Law*. *Coutts* has met with a case of twins of a syphilitic mother, one affected and the other apparently free. This would seem to show that inoculation of the fœtus is not necessary, and also that infection is most often through the ovum.

Effect on the Mother of Blood from a Syphilitic Fœtus.—This subject involves the question of *syphilis by conception*, which was promulgated by *Ricord* and *Diday*. There has been confusion as to the meaning of syphilis by conception, but the best definition is, 'Syphilis supposed to be acquired by a healthy mother from tainted blood through the placenta, from a syphilitic fœtus infected by the sperm of the father' (*Coutts*). This implies escape of the mother from infection by the father. In order to prove syphilis by conception (1) the father must be free from any infective lesion at

the date when the mother's syphilis might have been acquired from him; (2) the mother must always have been free from any primary chancre. The first requisite is almost impossible to prove, and the second is equally unsatisfactory because the primary sore is often unobserved.

There is much discrepancy among the upholders of this doctrine as regards the time of onset after conception. *Fournier* puts it at three weeks; *Diday* at parturition. *Fournier* and *Diday* think that if a mother bears a syphilitic child, she has always syphilis by conception, if not acquired another way. If no outward signs of syphilis occur in the mother, *Fournier* calls it latent. As a proof of this condition cases are quoted where women developed tertiary syphilis later on. But such instances are not restricted to fertile women, and occur in sterile women and in men. In these cases the secondaries have been so mild as to be unobserved. *Diday* stated that every conception by a mother by a syphilitic father adds to her syphilis, and that each succeeding pregnancy results in a product more syphilitic than the preceding one. This he termed the *law of increases.*

There is **no proof of syphilis by conception,** or of the law of increases. The only

evidence is that women have lived with syphilitic partners and escaped so long as they were sterile, but contracted syphilis when they conceived. But **proof of infection in the ordinary way is wanting.** The theory of syphilis by conception arose from the immunity shown by mothers bearing infected infants. But immunity to syphilis does not entail the necessity of having passed through syphilis itself. Syphilis is a germ disease, and the end of an attack is brought about by the formation of a chemical body by the germs, antagonistic to their own growth. This substance, according to *Coutts*, may be an antitoxin, and a mother may become immune by absorbing antitoxin from a syphilitic fœtus. This antitoxin in the mother may in turn act on the fœtus. In the first conception the antitoxin absorbed may be detrimental to the fœtus, and this may explain the bad results of first pregnancies. In the following pregnancies the mother's antitoxin would act with more effect. 'With each pregnancy the amount of antitoxin would be increased,' and might cure the disease in later conceptions, although all the time the father was capable of transmitting the disease. This would explain *Diday's* 'law of decreases' (*vide* Chapter XII.), also the greater severity of

mixed heredity or maternal syphilis over parental. *Coutts* finally suggests that, if any serum treatment should prove of any use, the serum should be taken from mothers who have borne affected infants and remained free from the disease, rather than from persons broken down with tertiary symptoms.

From the preceding matter it is obvious that the subject of hereditary syphilis is a complicated one and beset with diverse problems and conflicting opinions.

Colles' Law.—In 1837 *Colles*, of Dublin, wrote as follows: 'One fact well deserving our attention is this: that a child born of a mother who is without any obvious venereal symptoms, and which, without being exposed to any infection subsequent to its birth, shows this disease when a few weeks old, this child will infect the most healthy nurse, whether she suckle it or merely handle or dress it; and yet this child is never known to infect its own mother even though she suckle it while it has venereal ulcers of the lips and tongue.' Again he says: 'I have not seen any instance in which an infant infected by the mother communicated a venereal ulcer of the nipple to her.' These words constitute what was subsequently known as '*Colles' Law*,' and

a corollary to this law was added by *Profeta*—that healthy children born of a syphilitic mother are immune against the disease. For many years these laws were supposed to hold good, but more recently a considerable number of cases have been recorded which must be considered as true exceptions, and the so-called laws must be read in a modified form.

At a meeting of the Medico-Chirurgical Society on January 28, 1896, Dr. *George Ogilvie* brought forward twenty cases of exception to *Colles' Law* which he considered proven. *Ogilvie* holds that these exceptions break down the practical and theoretical consequences of *Colles'* and *Profeta's Laws*. At the same meeting, Mr. *Jonathan Hutchinson* considered that immunity of the mother was not absolute, and modified his former view as follows: 'An infant conceived by a mother and procreated by a syphilitic father will exert such influence in the mother as to render her susceptible of syphilis in a degree different from normal; it confers on her an acquired immunity.' Some writers have said that the exceptions to *Colles' Law* are cases of second infection; but if this is so the mother must have been infected twice in a few months, which is extremely improbable.

The practical bearing of these exceptions on the question of the mother suckling her child are dealt with in the chapter on the Treatment of Syphilis.

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CHAPTER XV.

Hereditary Syphilis (continued).

The signs of hereditary syphilis may be present at birth and in the stillborn child. Most infants born with symptoms die early. Marasmus is often due to syphilis, but the majority of syphilitic infants are plump at birth and free from symptoms for a month or more. The 'café au lait' complexion only occurs in marasmus. Marasmus affects the prognosis more than any other factor, and may be the only sign. The snuffles and rash may be slight, and may disappear under small doses of mercury, or may not appear for many months. The results of specific treatment are not a test of syphilitic atrophy, as most of such cases die with or without mercury. The post-mortem effects consist in atrophy of the mucous membrane of the stomach and intestines, so that no proper digestion can take place.

Symptoms.—Snuffles is generally the first

symptom before the skin eruption, but *Coutts* has observed it often after the sixth month and occasionally in the second year. Snuffles is often diagnosed as syphilitic when not so. It occurs in 'the coryza of infants,' which is accompanied by high temperature, acute nasal obstruction, laryngitis, and bronchitis. This may be mistaken for syphilis. *Coutts* has never seen discharge of bone and cartilage in snuffles, but active destruction of the nasal bones may occur in later hereditary syphilis. Specific ulcers on the fauces, palate, and mouth may occur at about four months, and later on fissures of the lips. Mucous tubercles occur later, and are common in relapses. They are more common in acquired syphilis.

The eruption is commonest on the buttocks, chin, upper lip, eyebrows, behind the ears, and on the palms and soles, but may be universal. It consists of erythematous patches of various sizes, which coalesce and become copper or yellow coloured. They often desquamate, especially on the sides and palms. 'Syphilitic furuncle' is often the only sign of late congenital syphilis. This consists in purple elevations of the epidermis, containing a little pus. It is most common in the third or fourth year.

Pemphigus occurs on the palms and soles, seldom later than the first week. Infantile pemphigus shows no preference for these sites. Syphilitic pemphigus is almost always fatal. After the first year eruptions of any kind, except mucous tubercles, are rare.

The **viscera** are early affected, especially the liver and spleen. Splenic enlargement due to syphilis seldom persists after the first year. The liver is diseased in more than half the cases, mostly at birth. The changes consist in interstitial hepatitis and occasionally gummata (*vide* Chapter II.). Jaundice is sometimes present, and when it occurs is usually fatal. Ascites is very rare.

The Osseous System.—*Parrot's* nodes on the frontal and parietal bones, constituting the so-called natiform skull, are undoubtedly due to syphilis. The cranial changes in rickets are confined to the frontal and parietal eminences. Rickets may be superadded to congenital syphilis, and after six months there may be a mixed type of skull. The cranial nodes of syphilis rarely last beyond the first year, and leave no trace of their presence. Syphilis predisposes to rickets, but *Parrot's* contention that every case of rickets has a foundation in syphilis

is untenable. Nodes on the long bones may occur in older children, and are commonly associated with keratitis.

Epiphysitis.—This is the most common bone lesion. It consists in proliferation of cartilage cells, with delayed ossification in the calcified matrix. The pressure of the proliferating cells on the blood-vessels causes atrophy of the cells from malnutrition. On section, an irregular yellow line is seen, due to necrotic tissue between the epiphysis and diaphysis. This may cause separation of the epiphysis. The bones affected are the lower ends of the femur, tibia and fibula, radius and ulna and ribs. Also there may be syphilitic dactylitis affecting the epiphyses of the phalanges. Epiphysitis may occur at any age in infants, but is rare after six months. Suppuration is rare.

Pseudo-paralysis is associated with epiphysitis. It is said to be due to muscular wasting from disease, due to pain; but it is often present without obvious enlargement of the epiphyses, and without pain. *Coutts* thinks it due to peripheral neuritis, and others attribute it to myositis. Pseudo-paralysis occurs in the first eight months, and usually affects the arms.

The well-known peg-shaped, or *Hutchinson's*,

teeth occur in the second dentition in hereditary syphilis. Keratitis is described in the chapter on Syphilis of the Eye.

Acquired Syphilis in Infancy. — This is uncommon, and differs from congenital syphilis in the absence of early visceral lesions, epiphysitis, infiltration of the skin of the face, soles, and palms, vesicular eruptions, and snuffles. In acquired syphilis of infants the distribution of the eruption is different, mucous tubercles and affections of the throat are present, and altogether the disease resembles more or less that of the adult. Moreover, a primary chancre is usually found.

The Contagiousness of Congenital Syphilis. — *Diday* taught that congenital syphilis was very contagious, and *Colles* stated that it could be conveyed by kissing and handling a syphilitic infant, as well as by suckling. But *Colles* confused cases of acquired with congenital syphilis in infants. The present view is that the contagiousness has been much exaggerated, and *Coutts* has only met with one case. At the East London Hospital for Children, in a district where promiscuous suckling is common, only five cases were observed out of 1,000, and four of these were exceptions to *Colles' Law*.

Coutts gives several explanations to account for the rarity of contagion: (1) Syphilis, which dates from conception, and hence is generally of about a year's standing, may have lost its original virulence; (2) some product absorbed by the mother during the first pregnancy may influence the following conceptions, and modify the disease, hence the first infant would be the most contagious; (3) specific sores about the mouth are rare in an infant before six months, and by this time treatment and time will have modified the complaint.

The contagion of acquired syphilis in infants is in marked contrast with that of the congenital disease.

Syphilis of the Third Generation.—The question of the transmission of syphilis to the third generation is one upon which much has been written but little proved. It appears to me to depend upon what is understood by syphilis. That syphilis, as such, is transmitted is extremely improbable, but that the damage done to the tissues of the organism may be transmitted is quite conceivable to the third generation, or possibly further.

Ernest Finger, in a report presented to the International Congress of Dermatology, August,

1900, discussed this question. He first points out the difficulty of the subject owing to the concealment of the disease by families, and also to the fact that the fathers of syphilitic children pose as the innocent victims of hereditary disease. Theoretically, transmission to the third generation is possible, but it is practically impossible to exclude the acquisition of syphilis in the second generation, either by infection of a healthy generator, or by reinfection of a hereditarily syphilitic generator.

Finger remarks that the dystrophic effects in the children of syphilitics are not always present, and that the limits of degenerative action in syphilis are not known. If this is true of the second generation, it must be still more so with regard to the third. Even if cases do occur they must be rare, for the intensity of the dystrophy diminishes from one generation to another. *Hutchinson* does not believe that syphilis is ever transmitted to the third generation.

The heredity of immunity for the descendants of syphilitics is a question which has even been studied by ancient authors. This immunity seems evident when one remembers that populations free from syphilis are gravely affected when

this affection is brought amongst them, and that in our time the disease is more benign than formerly. It is admissible that reinfection would be more frequent if opportunity was not diminished by certain circumstances, such as marriage, age, impotence, etc. Again, there are undoubted cases of reinfection in the subjects of hereditary syphilis. Finally, healthy infants, born of syphilitic parents, may contract syphilis.

There is no evidence that syphilis ever skips a generation.

Reinfection in Hereditary Syphilis. — It is an interesting question whether hereditary syphilis confers immunity against the acquired disease. *Berkeley Hill* writes: 'There is little known respecting the acquisition of syphilis in after-life by those who have inherited the disease from their parents. But there are a few cases recorded which establish this second infection as a possibility, while the rarity of its occurrence suggests that in most persons the inherited contagion protects them from further infection through life.'

Finger is of opinion that second infection is not uncommon, and that immunity apparently disappears at the time of puberty.

Mr. *Hutchinson* writes me that the subjects

of recognised inherited syphilis are too few to allow of any estimation of the frequency of their acquiring the disease. Sir *William Gowers* also remarks on the rarity with which conspicuous inherited syphilis is met with in persons over twenty-five years of age.

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CHAPTER XVI.

Hereditary Syphilis of the Nervous System.

The nervous system is not so often affected in the hereditary as in the acquired disease. The lesions of heredo-syphilis are of three kinds: (1) dystrophic, causing changes in evolution and development; (2) specific, or true syphilitic changes; (3) predisposing, leading to para-syphilis.

Lesions of evolution change the normal structure of organs, and in extreme cases cause monstrosity and teratology. It cannot be proved that such cases are caused by changes in the nervous system. Other malformations concern the central nervous system, and *Gardié* has described a case in which the antero-lateral columns were not developed, resulting in loss of function in the limbs and trophic disorders. *Charcot* has reported spasmodic paraplegia in three children with heredo-syphilis, probably due to arrested development of the pyramidal tract.

Spina bifida comes among dystrophic lesions. Congenital clubfoot is said to be due to arrested development of the anterior cornu of the cord, atrophy and diminution of the cells and of the column of Clarke—in fact, polio-myelitis at a certain level, due to heredo-syphilis.

The second class of cases includes specific lesions of the nervous system. These lesions are similar to those of acquired syphilis, according to *Fournier*. The size of the head is often normal at birth, but enlarges later by development of the skull. In hydrocephalus there is degeneration of the optic thalami, so that the ventricles form a single cavity, which may contain as much as 2 litres of fluid; the ependyma is thickened and yellow. The affection of the optic thalami is due to the fact that syphilis attacks the organs in the order of their development, the ganglions at the base being in a state of activity, while the convolutions are dormant. Hydrocephalic children often have convulsions and a spastic condition of the limbs, also deficient intellect up to idiocy. It is exceptional for them to reach adult age.

Encephalitis and Softening—Vascular Lesions.—In acquired syphilis softening due to thrombosis and arteritis obliterans

are common, but not so in hereditary syphilis. Cerebral hæmorrhage and softening are exceptional. Shrinking of the convolutions is often caused by bands of sclerosed neuroglia, or by necrotic foci of meningo-encephalitis. However, cerebral syphilis in the infant may present gummata, arteritis, foci of softening and cortical encephalitis, but these lesions are far more rare than in the acquired disease. Partial or complete hemiplegia may result from local encephalitis, or from a patch of gummatous meningitis. Hemiplegia is rare as an initial symptom of hereditary cerebral syphilis, but common in acquired.

Cranial Nerves.—Lesions of the cranial nerves are generally due to basal meningitis; gummatous neuritis is uncommon. The facial, trigeminal, and motor oculi nerves are the most often affected.

Symptomatology.—The nervous manifestations of heredo-syphilis become less common as age advances, but they have been described as late as thirty-two years. There are four kinds of symptoms—epileptiform convulsions, headache, intellectual troubles, and apoplectic symptoms.

1. The initial epilepsy may be simple, or

may be combined with other cerebral symptoms. The whole of classic epilepsy, major or minor, is capable of arising from heredo-syphilis. Early treatment is usually successful, excepting in the case of parasyphilitic epilepsy. The convulsive form of cerebral syphilis is that which is most easily curable; but if the affection is old and associated with other cerebral lesions, treatment is often unsuccessful. *Ripoll* reported in 1880 a case of epilepsy of ten years' standing which yielded to specific treatment.

Diagnosis depends on the antecedents of the patient or his family. Stigmata must be looked for, such as the triad of Hutchinson, ophthalmoscopic stigmata, arrests of development, cranial and nasal deformities, cutaneous eruptions and cicatrices, etc. On the other hand, the subject of heredo-syphilis may have no obvious specific sign. Inquiry must be made with regard to the family, the parents, and grandparents.

2. The second form, the cephalalgic, is much more frequent than epilepsy. The headache is variable and worse at night. It may last for weeks, and be the precursor of cerebral lesions. Headache is very amenable to treatment, but if not recognised may rapidly lead to grave symptoms.

3. The third form comprises intellectual and moral troubles. This is a severe form, rebellious to treatment, and often fatal, ending in convulsions, paralysis, and death. Sometimes it leaves permanent mental defect or idiocy. Hereditary cerebral syphilis commences with isolated phenomena, but afterwards may constitute a combination of terrible manifestations —paralysis, mental defect, convulsions, blindness, and deafness. These lesions may be confounded with tuberculous meningitis, tumours of the brain, and ordinary epilepsy. Tuberculous meningitis affects subjects of the same age, and sometimes the diagnosis may be impossible, even by examination of the cerebro-spinal fluid, for lymphocytosis occurs in both cases. The most distinctive signs of cerebral syphilis are absence of fever, the retracted abdomen, and the variable pulse, which are characteristic of tuberculous meningitis. The hydrocephalic cry is rare and the wasting not so rapid.

The Spinal Cord.—The changes in the cord in heredo-syphilis are identical with those of the acquired disease. There may be fibrosis or embryonic infiltration, endarteritis and sclerosis of the meninges. The most common result is paraplegia, which is preceded by radi-

ating pains in the limbs. If the cervical cord is affected, there may be quadriplegia. Extension of disease to the bulb and base of the brain may cause vertigo, ptosis, diplopia, gastric crises, and dyspnœa. If the dorso-lumbar cord is attacked, there is spasmodic paraplegia, with sphincter troubles, exaggerated reflexes, ankle clonus, and paræsthesia. Spinal syphilis may affect the infant or occur in late hereditary syphilis. The termination is variable: some are cured, others die.

Diagnosis.—In infants this has to be made from the pseudo-paralysis of *Parrot*, due to separation of the epiphysis. Hysteria, obstetrical paralysis, and spinal tubercle have to be thought of. *Peters* has described a form of syphilis in the cervical cord in sucklings. In this the position of the hands is curious. The forearm is pronated, so that the back of the hand is directed inwards and the palm outwards. The wrist joint is flexed and adducted, so that the hands are held like a seal's fin.

A form of disease similar to *Friedreich's* disease may be caused by heredo-syphilis.

Concerning the question of **parasyphilis** *Ingelrans* remarks that the three chief affections called parasyphilitic — viz., general paralysis,

tabes, and a special form of epilepsy—may be caused by hereditary syphilis. *Charrin* and *Léri* have recently thrown a new light on this question. They have examined the spinal cord in a number of infants and found microscopic hæmorrhages in most cases. These resulted from intoxication of the fœtus *in utero* by substances formed by the mother, or by infection developed in the newly-born infant on a soil predisposed by the maternal disease. If these infants had survived, the hæmorrhagic foci would have opposed the development of the nerve fibres, or have destroyed those already formed, or originated sclerosis or cavities in the cord. Hence the pathology of the nervous centres commences in intra-uterine life, and explains the arrests of development, scleroses, and excavations which constitute a large part of diseases of the brain and cord.

Little's Disease. — This was described by *Little* in 1861, and refers to stiffness of the limbs and slow movements. The child cannot talk or walk till four or five years old. The thighs are adducted and rotated inwards, the knees are held together, and the feet are in the position of equinus and adducted; the arms are less affected. Speech is uncertain, the reflexes

are exaggerated, and sensation is not impaired. Heredo-syphilis often produces this complaint, but it may arise from other causes. The lesion is sometimes cerebral, sometimes spinal, and appears to consist in sclerosis due to vascular disease occurring in the fœtus.

Parasyphilitic Epilepsy.—According to *Fournier* syphilitic epilepsy is associated with other cerebral phenomena, and is amenable to specific treatment. Parasyphilitic epilepsy, on the other hand, is isolated, and is not influenced by treatment. This also applies to hereditary syphilis.

Heredo-General Paralysis. — This may occur from eight to twenty years of age. Two symptoms are peculiar to heredo-syphilitic general paralysis—arrest of physical development and absence of the signs of puberty. The hereditary disease differs from that of adults in affecting males as frequently as females.

F. W. Mott states that in the juvenile form of general paralysis he found six out of thirty-two in which one or other of the parents had died of the same disease; in at least 80 per cent. of these thirty-two cases there were signs on the body, or a definite history pointing to congenital syphilis, and in the remaining 20 per cent. it was

probable. In many cases optic atrophy and blindness occurred long before the mental symptoms developed.

Mott mentions that occasionally one member of a family suffers from tabes, and another with general paralysis, and quotes a case in which the father was a general paralytic, and the child had congenital syphilis and tabes with optic atrophy. Cases such as these indicate an hereditary soil or temperament suitable for the poison to act in producing the degenerative process.

Tabes. — *Remak* has described three cases of tabes in children: in two there was certain hereditary syphilis, and in one probable; the father of the third also had tabes. *Goldflamm* has reported a case of acquired syphilis with tabes, which had several children with tabes.

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CHAPTER XVII.

Treatment of Syphilis.

The treatment of syphilis has for some time been the subject of much controversy, and recently several important discussions have taken place concerning it; the chief of these was at the International Medical Congress at Moscow in 1897. Many important articles by eminent authorities have also recently appeared in the Continental and in the English and American medical journals. I propose to give a résumé of the most important questions regarding the treatment of syphilis which have been discussed, and also to give my own opinion as to the relative merits of the various methods of treatment, and the best course to adopt in the treatment of the disease, both general and local.

We have three main points to discuss:

1. Should treatment be begun during the primary stage, or not till secondary symptoms arise?

2. Should the treatment be continuous, intermittent, or symptomatic ?
3. How long should the treatment last ?

1. Concerning the first question, the chief objection to treatment during the primary stage lies in the difficulty in foretelling whether a primary venereal sore will be followed by syphilis or not. The primary sores are so varied in nature, and syphilis follows so often on soft sores, especially in women, that the diagnosis, and therefore the treatment, must wait till secondary manifestations arise. Moreover, it is known that syphilis may occur without a primary sore. An undoubted case of this kind came under my own care, and was published in the *Lancet* (May, 1899). My own practice is to wait till the secondary signs appear, unless the sore is a typical 'Hunterian' hard sore, with distinctly hard and **enlarged** glands in the groin. The so-called **shotty glands** in the groin are not diagnostic, and often occur in connection with simple sores on the penis, such as herpes genitalis. In some people they are even found normally, especially, I believe, in athletes.

I also think it wise to treat a suspicious sore on the face, where it is likely to leave a scar and cause disfigurement. This applies

especially to primary sores on the eye or eyelid, which may cause much trouble during cicatrization.

2. With regard to the second question, we have three schools of thought, each having its own advocates. (*a*) **The continuous treatment** is the one usually adopted in England. (*b*) **The chronic intermittent treatment** is the one advocated by *Fournier* and others, and consists in alternate periods of treatment and intervals of rest. (*c*) **The symptomatic treatment** is upheld by *Neumann* and other Continental authorities. The advocates of this system only advise treatment during the actual presence of symptoms.

The difficulty in deciding which is the best of these three systems of treatment lies in the fact that it is almost impossible to obtain statistics showing the proportion of cases of tertiary syphilis which follow each system. In order to determine this, trustworthy notes would have to be kept of each patient for twenty years or more. The objections raised against the continuous and the intermittent methods are, first, that they do not prevent relapses; and secondly, that the system becomes so inured to the presence of mercury in the tissues, that it requires large

doses of the drug to produce effect if further symptoms arise.

3. As regards the duration of mercurial treatment the periods recommended vary from one to five years, the usual time being two years.

For my own part I think the symptomatic treatment the best in the main, but that it is wise to begin with a course of six months more or less continuous treatment—say two courses of three months each, with an interval of two or three weeks between them, the second course being milder than the first. After this I think the treatment should be regulated by the presence or absence of symptoms. The patient should, however, be advised to present himself for examination once a month for another year.

The objection to the prolonged treatment is, as mentioned above, that the mercury has less power to act when the system is saturated with it.

Methods of administering Mercury.—These are: (1) Internal medication, usually by pills; (2) fumigation; (3) inunction; (4) intra-muscular injection; (5) intra-venous injection.

Internal medication is the most usual and most convenient method. The objections

to it are the occasional occurrence of digestive disturbances, diarrhœa, etc.

Fumigation.—This method is seldom used now, but it was held in great favour by the late Mr. *Henry Lee* up to the time of his death. Fumigation is carried out by means of a vapour bath, which is best taken at bed-time. From 20 to 30 grains of calomel are placed in a metal dish, which is placed in another dish containing some boiling water, and the whole is placed over a spirit-lamp. This apparatus is placed under the seat of a chair on which the patient sits, covered with a blanket reaching from the floor to his neck, which it surrounds closely. In about twenty minutes the calomel is volatilized and absorbed by the skin owing to the profuse perspiration induced by the vapour bath. After this he is wrapped in a blanket and put to bed. This treatment is repeated two or three times a week till the desired effect is produced. It cannot be recommended as a routine treatment, but may be tried in cases which resist other forms of treatment.

Inunction.—The method carried out at Aix-la-Chapelle, where it is the routine treatment, is as follows: The patient takes a short walk before breakfast and drinks the natural

water. This is followed by a light breakfast, after which a bath of the natural water is taken. Half an hour later a professional rubber rubs in 75 grains of mercurial ointment a little weaker than that of the B.P. The rubbing lasts twenty minutes, and is done in the following order: First day, the calves; second day, the thighs; third day, the back and arms; then returning to the calves. The course lasts six weeks, and the patient is told to take great care of the teeth and gums, brushing the former after each meal, and washing the mouth with a wash consisting of acetate of lead and alum. The patient's diet is not restricted, and he is advised to live well. Spirits are forbidden, but claret and beer permitted. The treatment is repeated within a year.

The objection to the inunction cure carried out at home is the difficulty in keeping it secret. It is also a dirty method.

Intra-Muscular Injections.—These are made once a week into the muscles of the buttock by means of a platinum iridium needle and syringe.

The chief substances used are: (1) **sal alembroth** (10 minims of the fluid equals $\frac{1}{3}$ grain of the salt). Injections are made once a week into alternate buttocks till symptoms have dis-

appeared ; then every two weeks, and later every month till a year or a year and a half have elapsed. (2) **Gray oil.** This consists of mercury ʒj ; lanolin ʒij by weight ; and carbolic oil (1 in 20) ʒiv by measure. This has been used by Major *Lambkin* extensively in the treatment of syphilis in the army. (3) **Sozoiodol of mercury** (sozoiodol contains 54 per cent. iodine, 7 per cent. sulphur and 20 per cent. phenol) has also been used as an injection. *Lambkin* recommends Sodæ Iod. gr. x ; Hydrarg. Sozoiodol gr. v ; Aq. Dest. ℥200. Ten or fifteen minims of this are used once or twice a week. (4) **Salicylate of mercury.** This was recommended by *Hallopeau* and others in the form of 4 parts salicylate of mercury to 30 parts oil of vaseline. Half a cubic centimetre was used twice a week. (5) **Calomel.** This is used by some Continental surgeons as a routine treatment, but *Fournier* and others confine its use to cases which resist other forms of treatment, or to certain special conditions, such as recurrent erosion of the tongue, etc. One to one and a half grains are used at a time, suspended in oil or glycerine.

The advantages of the injection treatment are : (1) Secrecy, (2) definite dose of mercury, (3) it is

carried out by the surgeon himself. The disadvantages are: (1) pain, (2) induration of the buttocks and abscess. Abscess can be avoided by antiseptic precautions, but the pain is considerable in sal alembroth and sozoiodol injections, and severe in the case of calomel. The gray oil appears to be the least painful. I have myself only had experience with sal alembroth injections, and have frequently had to give them up owing to the pain caused by them. Moreover, I have seen no advantage in this method as regards results, compared with inunction or internal medication.

Intra-venous Injection.—This method consists in injecting into one of the veins of the arm 20 minims of a 1 per cent. solution of cyanide of mercury. Injections are made daily till symptoms disappear. Its advocates claim that it is painless, rapid in its effect, and that it often cures lesions which resist other methods. The disadvantages are the irksomeness of daily injections, both to patient and operator, and the possible risk of thrombosis.

In reviewing these different methods, I think that internal medication is the best for all ordinary cases of syphilis, and inunction or injection of gray oil the best for severe cases, and

cases where rapid mercurialization is indicated, such as iritis, etc. The best form of ointment for inunction is the **unguentum cinereum,** consisting of 1 part of mercury, 1 part of lanoline, and ½ part of olive oil. Half a drachm of this should be rubbed in daily after a warm bath, and different parts of the body used alternately. The rubbing should last twenty minutes. The best form of **pill** is, I think, 2 grains of blue pill with ⅛ grain of powdered opium. Other pills which may be tried are the gray powder; Plummer's pill (containing 1 grain of calomel); the tannate of mercury.

When the author was resident medical officer at the Lock Hospital he had the opportunity of comparing the results obtained by the methods of inunction and intra-muscular injection, half the cases being treated by one method and the other half by the other method. Sixty-nine cases were under observation for upwards of a year. Of these 69 patients 37 were treated by intra-muscular injection and 32 by inunction during the active symptoms of secondary syphilis. When the symptoms had subsided, the treatment was continued by blue pill. On comparing the two methods, it was

found that there were 16 relapses during or after treatment by intra-muscular injection, including no less than 4 cases of severe iritis and 1 case of early tertiary syphilis. On the other hand, out of the 32 cases treated by inunction there were only 7 relapses, and only 1 case of iritis.

Considering that nearly all these cases were under observation in hospital for a year or more, I think that it is justifiable to draw the conclusion that relapses are twice as frequent with the injection treatment as with inunction. This view is supported by observations on several hundreds of cases which were observed for shorter periods (*Lancet*, August 24, 1901).

Local Treatment.

Primary sores are best treated with powders such as creolin, airol, chinosol, etc. Iodoform is objectionable, and the others are just as good, if not better. **Phagedenic** sores should be treated by warm disinfectant baths containing creolin, chinosol, etc.

Cutaneous syphilides often benefit by the addition of local treatment. The best ointments are the ammoniated mercury or the yellow oxide.

Tertiary sores also improve with local treatment. Liquor sodii chlorinatæ is one of the best lotions to use; creolin is also good. The mercurial ointments mentioned above may be used in a dilute form, but the red oxide of mercury is preferable. I have had good results from the use of a 1 per cent. ointment of iodine. Powders such as airol and other of the new iodine compounds are also useful.

Ulceration of Throat.—For ordinary cases of ulceration a mixture of iodide and chlorate of potassium is good. Locally the ulcers may be touched with chromic acid, 40 grains, or silver nitrate, 10 grains to the ounce. As a gargle, perchloride of mercury is one of the best, but for severe cases I have found a gargle of chlorine water very useful.

The Use of Iodides.—The best method to administer iodides is by a mixture of the sodium and potassium salts. Five grains is enough to begin with, and the effect is improved if the dose is diluted with $\frac{1}{2}$ pint of water and taken on an empty stomach. **Iodism** often disappears when the dose is increased. If it does not subside, it is best treated with arsenic, and iodism is often prevented by adding two or three drops of liquor sodii arseniatis to each dose of iodide.

The question as to the use of iodides in the secondary period is one on which opinions differ. I think it hastens the disappearance of symptoms, and also helps to circulate the mercury in the system. In severe secondary lesions the combination with mercury as the biniodide is often effective.

Treatment of Congenital Syphilis.—The main principles of this are: (1) If the mother is syphilitic, the child should be suckled and treated through the mother's milk by administering mercury to her; (2) if the mother has no signs of syphilis, it is a debatable question whether she should suckle the child or not. The argument against the mother suckling the child is the possible infection of the mother from the child, forming an exception to *Colles' Law* of immunity. The arguments in favour of suckling are the rarity of such cases of infection and the better nourishment the child gets. *Coutts*, who has investigated this important question ('Hunterian Lectures on Infantile Syphilis') thinks that the danger of infection from inherited syphilis is much exaggerated, and mentions that out of many thousands of cases seen at the Shadwell Children's Hospital, he has only seen or heard of five cases of infection from inherited syphilis,

four of which were exceptions to *Colles' Law*. He considers the exaggerated ideas of the infectiousness of hereditary syphilis held by the older writers, such as *Colles* and *Diday*, were largely due to cases of acquired syphilis in infants being confused with the inherited cases. *Coutts* therefore advises the healthy mother to suckle her syphilitic child, *except* when she has cracked nipples or the child has sores in the mouth.

In the absence of suckling, the best treatment for the infant is to put some mercurial ointment (half B.P. strength) on the binder. Enough of this is absorbed owing to the child's movements. Later on 1-grain doses of gray powder may be given two or three times a day. This drug is well borne by children. Treatment of hereditary syphilis should be symptomatic—*i.e.*, limited to the periods when symptoms are present.

Preventive Treatment.

Fournier has recently advocated the preventive treatment of hereditary syphilis by treating the child *in utero*. He advises treatment of the mother with mercury in all cases where the father is likely to infect the child, whether the mother has syphilis or not. He states that it seldom causes abortion, and does no harm to the

mother. Small doses should, of course, only be given.

Hygienic Treatment of Syphilis.

This forms one of the most important factors in the treatment of syphilis. The patient should get as much fresh air and moderate exercise as he can. He should have a liberal diet and a moderate amount of port wine or burgundy. Tonics, especially quinine, are often of much value. In cases of anæmia caused by syphilis or mercury, arsenic has more effect than iron.

As regards the administration of **alcohol** in syphilis, opinions differ. One authority is fond of stating that 'you can preserve syphilis in alcohol,' and forbids all alcohol to his patients. However, it does not appear to me to be a rational proceeding to forbid all stimulants to a man accustomed to his glass of wine, and put him on a course of depressing drugs. By all means let him be moderate, but a course of good port wine will often cause much improvement in his condition. I should rather prefer to say, 'You can preserve syphilis in mercury,' for I believe much harm is done by the injudicious use of mercury.

In conclusion, I wish to point out that the

routine treatment of syphilis by any method (excepting, of course, a possible serum treatment in the future) is not scientific. Each case must be treated on its own merits, for we are dealing with a very variable disease. Also syphilis must differ according to the stage to which the disease has advanced in the person from whom it was contracted, and according to whether this person is under treatment or not. Syphilis is also modified by the co-existence of other diseases, such as Bright's disease, etc., but these problems are too complicated to discuss at present.

Prognosis. — The curability of syphilis would appear to be proved by the occurrence of reinfection, and it is probable that most attacks are cured. But the difficulty which any single observer has to deal with is great, owing to the long duration of the disease in certain cases, and the possibility of tertiary syphilis occurring after ten or even twenty years. A recent publication of *Tarnowski** is of great interest in connection with this subject. He has collected fifty cases which he has been able to follow up to forty years. The conclusions he arrives at are as follows: (1) Syphilis is curable at all periods of its evolution. The disease may be limited to

* *Russian Archives of Pathology*, etc., vol. ix., 1900.

the initial lesion, but cure generally takes place in the secondary period. A complete cure may happen also in the tertiary period. (2) Medication by mercury and iodides was employed in the cases under consideration, but this treatment is not the only factor in the cure of syphilis. (3) A robust constitution, absence of hereditary predispositions, and freedom from other diseases are important factors. (4) The curability of syphilis is influenced by the resistance opposed by the organism—an inherent resistance peculiar to each individual which cannot be well defined. (5) The danger of syphilis depends on the localization of the symptoms, and also in the phenomena known as parasyphilis.

The analysis of *Tarnowski's* 50 cases gives the following results: The disease ceased on the average twenty-eight years after infection. Patients treated during the first four years with mercury and iodides remained free from symptoms for twenty-four years. In 1 case only the disease was limited to the initial lesion. In 31 cases out of the 50 there were no tertiary symptoms; the rest were cured after having suffered from gummata. Of 48 men who suffered from syphilis, 27 married. Two women also married after infection. Of these 29 marriages, 6 were sterile;

23 gave birth to 63 children, of which 56⅝ presented no signs of hereditary syphilis. All the patients, with one exception, belonged to the educated classes. Treatment was prolonged, and most of the patients were given iodide of potassium for several years after a cure with mercury.

As I have already remarked, few of us are able to trace the history of our syphilitic patients for many years. *Tarnowski's* experience covers more ground than that of most specialists, and the cases reported by him are therefore of much importance.

The futility of destroying the initial lesion is well shown in a case recorded by *Berkeley Hill*. A gentleman during violent intercourse ruptured his frænum. This was seen by *Hill* about eleven hours later. *Ricord's* views were then (1858) in vogue, that destruction of the sore within five days of its existence would prevent syphilis. The wound was cauterized with fuming nitric acid and healed. But a few weeks later the scar became indurated, the inguinal glands enlarged, and general syphilis followed, lasting two years.

CHAPTER XVIII.

Serum Treatment of Syphilis.

Several experiments have recently been made in the treatment of syphilis by serum therapy, but so far no definite conclusion has been arrived at. The following are the most important investigations:

Tarnowski performed repeated inoculations in a horse with the secretions of primary sores and mucous tubercles, and by the introduction under the skin of pieces of the same. No symptoms were produced in the horse, but the autopsy showed lesions corresponding to syphilis in the lymphatic glands, liver, heart, and aorta. Horses are therefore, according to *Tarnowski*, capable of inoculation with syphilis. The serum taken from the horse was used on six syphilitic subjects with the following results: the serum did not influence the development of the primary sore or the appearance of the secondary phenomena; in the tertiary stage there was no reaction to the

serum. *Tarnowski* infers from this that efficacy of antitoxin does not depend on the destruction or neutralization of the toxins, but on increasing the resisting power of the subject. Mercury he regards as acting in the same way. He thinks it possible that the serum of animals, having a certain receptivity for syphilis, if introduced as a vehicle for the administration of antisyphilitic remedies, may produce favourable results by increasing the immunity of the blood. With this idea in view, he mercuralized healthy horses with injections of calomel, and used the serum on sixteen soldiers by intra-muscular injection. The result was nil as regards the progress of the disease, and the patients suffered from anæmia, fever, and albuminuria.

Experiments of a similar nature were made by *Barbiani* with the serum of animals inoculated with syphilitic blood. The animals used were a ewe and a ram, and these were inoculated with the blood of patients with recent secondary syphilis. Two c.c. of blood were injected into the jugular vein of the ewe. Sixty grammes of blood from a different patient, after being mixed with oxalate of soda to prevent coagulation, were sterilized and injected into the jugular vein of the ram. From the blood of the two animals

serum was separated and used in three cases of syphilis.

Case 1. **Secondary Syphilis.**—The patient was the same from which the second animal had been inoculated. Ten injections were made with the ewe's serum in seventeen days. The result was a failure.

Case 2. **Primary Syphilis.**—Sixteen injections with ewe's serum were made in thirty-nine days, followed by thirty-four injections of ram's serum extending over eighty-two days. This did not prevent the appearance of a roseola and a papular syphilide, but these disappeared after the forty-seventh injection, and the patient was free from symptoms six months later.

Case 3. **Tertiary Syphilis.**—Twenty injections of ram's serum were made in forty-two days. Considerable improvement took place, and was maintained eight months later. The author does not regard his experiments as conclusive, but thinks that future research on the same lines may lead to some result.

Direct Treatment with Serum of Syphilitics.—*Vyeviorovski* has experimented with serum obtained from patients after the disappearance of the secondary signs, and with serum from tertiary cases. This serum when injected

caused an increase in hæmoglobin, in the number of red corpuscles, and in the metamorphosis of the leucocytes. Only serum from syphilis caused these changes; blood from healthy persons had no effect on the blood of syphilitics. The action was also independent of treatment. Serum from inherited syphilis had the same effect. In eight cases out of sixteen the signs disappeared after the use of serum alone. A case is mentioned where the injection of serum three weeks after the appearance of a chancre prevented the appearance of secondary symptoms, while in three other cases, when the serum was given later, secondary eruptions were not prevented. The author takes a favourable view of serum treatment, but I venture to doubt the prevention of secondary syphilis in the case quoted, because it was not proved to be a case of syphilis. Syphilis cannot be diagnosed with certainty till secondary signs appear.

Moore has reported thirty cases treated with the serum of patients with tertiary syphilis. The serum, which was obtained by means of cantharides plasters, was injected every third or fourth day for one or two months, 10 cc. to 40 cc. at a time. Cases of refractory syphilis were said to have improved. The serum was also applied

locally to syphilitic sores with good results. The best serum was obtained from persons in the late stages of syphilis, and those who had been treated with the serum yielded in turn better serum than those who had been treated with mercury.

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PART II

GONORRHEA

CHAPTER XIX.

Gonorrhea.

Definition.—Gonorrhea is a specific catarrhal inflammation of certain mucous membranes—acute, sub-acute, or chronic. It is contagious, and is due to the presence of a microbe, the gonococcus. In the male it affects the urethra and its annexes ; in the female the vagina, urethra, and cervix uteri. The disease is at first a local one, but it may become general by dissemination of the gonococci or their toxins in the system. The disease may also spread by extension to the uterus, Fallopian tubes, and ovaries in the female, and to the testicles, vesiculæ seminales, prostate, and bladder in the male.

History.—Gonorrhea is probably as ancient a disease as syphilis, and possibly older. The Chinese Emperor, Hoang-ti (2637 B.C.) defined the disease, according to *Dabry*, thus : ' Inflammation of the urethra or vagina at the same time as the bladder ; discharge of corrupt matter, white

or red, by the urethra or vagina. The causes of this discharge are due—(1) to contact of the penis with matter of a peculiar nature emitted by the genital organs of the woman ; (2) to an inflammation of the bladder produced by excess of coitus or masturbation, the repeated absorption of a heating drink or medicine ; by dysentery, gout, the introduction of a hard body in the vagina or penis, chilling during or immediately after coitus, efforts to provoke ejaculation, etc.'

The disease was apparently known to the Hebrews, for Moses in Lev. xv. speaks as follows :

'2. Whosoever hath an issue from his flesh is uncleane because of his issue.

'4. Every bed whereon he lieth that hath the issue shall be uncleane, and everything whereon he sitteth shall be uncleane.

'7. Also he that toucheth the flesh of him that hath the issue shall wash his clothes and wash himself in water, and shall be uncleane untill the even.

'10. And whosoever toucheth anything that was under him shall be uncleane untill the even.

'12. And the vessel of earth that he toucheth which hath an issue shall be broken, and every vessell of wood shall be rinsed in water.

'13. But if he that hath an issue be cleansed of

his issue, then shall he count him seven days for his cleansing, and wash his clothes and wash his feet in pure water; so shall he be cleane.

'16. Also if any man's issue of seede depart from him, he shall wash all his flesh in water and be uncleane untill the even.

'19. Also when a woman shall have an issue, and her issue in her flesh shall be blood, she shall be put apart seven days, and whosoever toucheth her shall be uncleane unto the even.

'24. And if a man be with her, and the flowers of her separation touch him, he shall be uncleane seven dayes, and all the whole bed whereon he lieth shall be uncleane.

'25. But if she be cleansed of her issue, then she shall count her seven dayes, and after she shall be cleane.'

Here, according to *Buret*, we have two distinct conditions, viz., contagious discharge, and simple ejaculation. According to *Hamonic*, the Hebrew word **mizobo** means discharge, and **chigh-both,** ejaculation. In verse 16 the latter occurs, and the subject is declared impure only until the evening; whereas, in the former case, verse 13, he has to wait seven days after cure.

In the case of the woman, the interpretation is probably that a woman should wait seven days

after menstruation before copulation—the well-known Hebrew practice, which is said to be kept up in the present day. Also we see the old idea that a man having connection with a woman during menstruation is liable to contract urethritis. This fallacy was maintained by *Diday*, who termed it 'urethrorrhœa.'

Gonorrhea was also known to the Greeks and Romans, and is spoken of by *Hippocrates* and *Celsus*.

Hence gonorrhea existed in antiquity, and its nature and contagious properties were known and dealt with by prophylactic and therapeutic measures. Towards the end of the fifteenth century syphilis rapidly developed with an intensity not observed before, and a second period occurred where the two diseases were confounded. This resulted in the so-called **unicist** doctrine, which was supported by the experiment of *Hunter*, who inoculated himself with gonorrheal pus and developed syphilis.

In the middle of this chaos of ideas *Ricord* arrived, and after 667 inoculations proved definitely the non-identity of the virus of syphilis and gonorrhea. He explained *Hunter's* experiment as due to inoculation from a chancre of the urethra. *Ricord*, however, denied the virulent

nature of gonorrhea, and regarded it as a simple catarrh produced by various irritations, such as menstrual discharge, lochia, leucorrhea, injections, instruments, strong drinks, sexual excess, etc. His remarkable 'receipt for acquiring gonorrhea' illustrates his views very well. This reads better in the original French than in the uncompromising English language. 'Voulez-vous attraper la chaudepisse? en voici les moyens: prenez une femme lymphatique, pâle, blonde plutôt que brune, aussi fortement leucorrhéique que vous pourrez la rencontrère; dinez en compagnie; débutez par des huitres et continuez par des asperges; buvez sec et beaucoup, vins blancs, champagne, café, liqueurs, tout cela est bon, dansez a la suite de votre repas et faites danser votre compagne; échauffez-vous bien et ingérez force bière dans la soirée; la nuit venue conduisez-vous vaillament; deux ou trois rapports ne sont pas de trop et mieux vaut davantage; au réveil n'oubliez pas de prendre un bain chaud et prolongé; ne negligez pas non plus de faire une injection; ce programme rempli consciencieusement, si vous n'avez pas la chaudepisse, c'est qu'un dieu vous protège'!

Ricord's views were followed by experimental inoculations of ordinary pus. *Zeissl* caused

traumatic urethritis by means of a catheter, and then inoculated ordinary pus with negative results. But gonorrhea followed inoculation with gonorrheal pus.

In 1879 *Neisser* discovered the gonococcus in urethral and conjunctival gonorrhea. This was confirmed by *Bokai* and *Finkelstein*, who also cultivated the microbe and reproduced acute urethritis by inoculation of cultures. In 1884 *Zweifel*, *Bumm*, and *Welander* demonstrated that the lochial secretion was incapable of causing conjunctivitis in new-born infants, unless containing gonococci.

Bacteriology.—Gonococci occur chiefly within the pus-cells. The gonococcus is a diplococcus, each half being kidney shaped. It never occurs in chains. It is easily stained with methyl blue or violet, gentian or fuchsin. It is decolorized by *Gram's method*, which differentiates it from other micrococci. *Steinschneider* and *Galensky* describe four species of diplococci occurring in the normal urethra, two of which retain colour with *Gram's method* and two which decolorize. The latter are rare; hence *Gram's method* is diagnostic in 95 per cent. of cases.

Preparation.—A drop of gonorrheal pus is spread between two cover-slips, dried through

a flame, and placed in a solution of methylene blue or fuchsin. After two or three minutes the preparation is washed, dried, and mounted in Canada balsam. For rapid diagnosis *Bumm* stains for half a minute in gentian violet, and examines, after drying, in oil with an immersion lens without a cover-glass.

Cultivation.—The gonococcus will not grow on the ordinary media, such as agar, gelatin, peptone, or bouillon, but will grow at a temperature of 38° C. on serum mixed with agar, in the proportion of 1 part of serum to 2 of agar. The temperature must not be beyond 38° C. or below 36° C., as a temperature of 40° C. will injure or destroy the gonococci, and the agar is coagulated by a temperature below 36° C. Hydrocele or ascitic fluid may be used instead of serum; but for rapid cultivation watery extract of spleen may be used, which is rich in leucocytes. On such serum-spleen agar the gonococci grow rapidly and abundantly, but also lose their vitality quicker. The culture takes the form of a thin, almost colourless film with numerous vertical prolongations. *Bumm* found that the transference of a second up to a twentieth culture of gonococci, when inoculated on the urethral mucous membrane, caused

acute urethritis, the pus of which contained numerous gonococci.

Conclusion.

(1) In all suppurations of a gonorrheal nature urethral and conjunctival especially, the gonococcus is found. (2) This coccus is absent in non-gonorrheal processes. (3) Pus which does not contain the gonococcus is incapable of reproducing gonorrhea. (4) Pus containing gonococci can transmit gonorrhea. (5) Culture of other micro-organisms does not produce gonorrhea by inoculation. (6) Inoculation of cultures of gonococci reproduces gonorrhea with multiplication of the inoculated microbes. (7) After staining with *Gram's* and a contrast stain the intra-cellular gonococci are stained by the latter and not by the former. (8) Cultures do not grow on agar without serum. (9) Diplococci taken from such cultures do not stain by *Gram's method.*

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CHAPTER XX.

Treatment of Gonorrhea in the Male.

I PROPOSE to give a résumé of the various methods of treatment of gonorrhea in the male, and to endeavour to come to some conclusion with regard to their relative merits.

Local Treatment.

Injections.—This is the oldest method and the one most generally used. The syringe should hold about ½ ounce, and have a conical, blunt point. Syringes with long nozzles are to be avoided, as they irritate the inflamed urethra. Before injection the patient should always pass water to clear the urethra. The injections should be made slowly and steadily till the fluid is felt to reach the inflamed part. In early cases of gonorrhea it may be sufficient to inject the anterior part of the urethra only, stopping the flow by the finger of the left hand pressed on the urethra.

With regard to the value of injections, some authorities have stated that ordinary injections with a syringe do not reach the membranous and prostatic parts of the urethra, and hence they advocate the irrigation method by hydrostatic pressure. However, some interesting experiments were made a few years ago by *Vajda* of Vienna, in order to test this point. So far as I know these experiments have passed unnoticed in the English journals, except for an account which the author abstracted for *Treatment*. The method adopted was to inject a solution of methylene blue, and then to see how far it had passed, by means of the urethroscope. The results showed that injections could be made to reach the end of the urethra. *Vajda* concluded:

1. That urethral injections, performed in the usual way, with few exceptions, reach the membranous and prostatic urethra.

2. That the injected fluid not only passes along the central part of the urethra, but also reaches the folds of mucous membrane. This was proved in an ingenious way as follows: The folds of the urethra and the orifices of the ejaculatory ducts were touched with a solution of perchloride of iron; an injection of 1 per cent. ferrocyanide

of potassium was then made. The result was the formation of Prussian blue, showing that the injected fluid had reached the parts of the urethra touched with perchloride of iron.

3. That particles suspended in the injection are carried wherever the injected fluid goes, and there are no facts to support the alleged filtration of injections, by which is meant that suspended particles (in emulsions) do not reach as far as the fluid suspending them. This was proved by suspending particles of talc in an injection of sodium gallate. The urethroscope showed that the particles of talc reached the prostatic and membranous urethra, even penetrating the small folds of mucous membrane.

4. That the obstruction to the injected fluid is caused by the unstriped muscle of the urethra and the tonus of the striped muscle of the membranous and prostatic urethra, most obstruction being in the penile and bulbous urethra.

5. That the tonus of striped and unstriped muscle of the membranous and prostatic parts of a diseased urethra opposes a resistance to the entry of injections, which may be overcome without danger, being not much different to that of a healthy urethra, and not more than 2 metres of water pressure. With a full bladder, and also

with tenesmus of the urethra, the resistance is increased.

6. To relieve tenesmus the injection fluid should be warmed, and the pressure should not be more than 2 metres of water. The injection should be slow and steady, with a syringe of uniform calibre and regular action.

7. About 3 drachms of fluid is enough to reach the prostatic urethra.

8. The first sign to stop the injection is tenesmus, which, according to endoscopic examination, occurs when the fluid enters the prostatic urethra. The amount of pressure and the quantity of fluid vary in producing tenesmus even in the same subject.

Solutions for Injection.—These are divided into germicides and astringents. Of late years several new preparations of silver have been introduced with a view to improve on the old silver nitrate. These are: *Argonin*, *argentamin*, *protargol*, *itrol*, *largin*, and *albargin*. Itrol is a citrate of silver; the others, combinations of silver with an albuminous basis. The advantages claimed for these drugs are: (1) absence of irritation; (2) greater penetrative power; (3) a stronger bactericidal action on the gonococci; (4) absence of the coagulative action on albumen,

which limits the action of silver nitrate. Protargol is, perhaps, the best of these, and should be used as a 1 per cent. solution, injected several times daily till the discharge becomes clear. After this astringents should be used to complete the cure. The best of these, in my opinion, is chloride of zinc, 1 or 2 grains to the ounce. Acetate of zinc of the same strength is also good.

Irrigation.—This method was advocated chiefly by *Janet* of Paris and *Valentine* of New York. The apparatus used consists of a glass vessel holding from 1 to 2 litres, connected with which is a rubber tube ending in a short glass cannula large enough to close the meatus. The glass vessel is raised or lowered according to the pressure required. The anterior urethra is first irrigated from a height of 20 inches, the solution being controlled by pressure on the urethra with the fingers. Then the middle part of the urethra is treated, the vessel being raised about 3 feet. Lastly, the posterior urethra and bladder are irrigated from a height of about 4 feet. The patient is taught to relax the sphincter vesicæ muscle by attempting to urinate, thereby allowing the fluid to enter the bladder. *Janet* uses permanganate of potassium: 1 in 2,000 for the first

irrigation; 1 in 1,500 for the next, five hours later; then 1 in 1,000 in another five hours; and 1 in 2,000 twelve hours after this. The last is repeated every twelve hours for five days. At the end of this time it is claimed that the gonococci have disappeared and the patient is cured. The so-called *abortive* treatment consists in beginning this method at the earliest stage of the disease—viz., when there is swelling and eversion of the mucous membrane at the meatus. Hot saline solutions have also been used by this method.

Medicated Bougies.—Soluble bougies made with theobroma were recommended some years ago by Sir *Henry Thompson*. Silver nitrate was the drug usually employed. More recently *Reynal* introduced medicated bougies, consisting of gelatine with an outer coating of gum, in which the drug was dissolved. These bougies were about 7 inches long, and contained various sedatives and astringents. Bougies containing opium and belladonna were used extensively at the Midi Hospital, Paris, and were said to relieve painful micturition and erections. *Berkeley Hill* did not recommend bougies in the acute stage, as they cause irritation. In the later stages, and especially in gleet, when the discharge

comes from a local patch, he has used with success bougies containing chloride or sulphate of zinc with opium or belladonna. The bougie is inserted at bedtime, and dissolves during the night. More recent forms of bougie contain the active ingredient incorporated with gelatine. Iodoform bougies have been used by some surgeons.

I have had no personal experience with bougies, but they do not appear to constitute a scientific remedy for two reasons: (1) It is difficult to get a bougie to reach the posterior urethra; (2) drugs in an oily basis have not the same penetrative action as in aqueous solution or suspension. The latter objection would not apply to the gelatine bougies.

Lohnstein claimed good results from special bougies called 'antrophores,' made with thallin in a glycerine and gelatine basis.

Internal Treatment.

The drugs in general use for gonorrhea are *copaiba*, *cubebs*, and *santal oil*. These are excreted practically unchanged in the urine, and are supposed to disinfect the urethra. However, they have the disadvantage of frequently causing gastric disturbance. If copaiba is given, it should be in the form of resin, and not balsam, as the

resin is better borne by the stomach. *Methylene blue* has been used as an internal remedy in the dose of 1 or 2 grains thrice daily. It is excreted unchanged in the urine, and is said to have a destructive effect on the gonococci. *Salol*, in doses of 5 to 10 grains two or three times a day, is also used, and, so far as my experience goes, is the best internal drug to use. *Cystogen* and *urotropin* have also been advocated.

General Treatment.

Patients with acute gonorrhea should avoid excess of any kind, both in diet and exercise. Alcohol should be avoided in the acute stage, and large quantities of alkaline drinks taken. The diet should be nutritious, but simple, and the bowels must be kept freely open with Carlsbad salts or some other aperient. A suspensory bandage, or better still, bathing-drawers, gives relief, and may tend to prevent epididymitis. Lint or wool applied to the meatus are bad, as they retain the discharge. A small sponge-bag, perforated for ventilation, with a piece of absorbent wood wool at the bottom, may be worn if there is much discharge.

Chordee.—This is a term applied to painful erections at night, due to inflammatory exuda-

tion about the urethra, causing the penis to become bent during erection. A pill of 3 grains of *camphor* at bedtime often prevents it. If severe, a morphia or cocaine suppository may be given. *Berkeley Hill* recommended a pill of camphor, 3 grains; extract of opium, $\frac{1}{4}$ grain; and extract of belladonna, $\frac{1}{6}$ grain. To be given at bedtime.

Chronic Gonorrhea or Gleet.

The average duration of an attack of gonorrhea is six to eight weeks, and according to *Finger* the average duration has not been diminished by the use of new drugs or methods, although the frequency of complications is, perhaps, less than formerly. If not cured in two months, gonorrhea may become chronic and pass into the condition known as gleet, in which a thin discharge persists, which is often rebellious to treatment. A few intractable cases are not cured by any means at our disposal.

The causes and treatment of gleet are stated by *Hurry Fenwick* as follows:

1. **Membrano-prostatic Catarrh.**—This is the commonest cause of gleet, and is due to the injections not having reached the posterior urethra behind the compressor urethræ muscle.

It is best treated by instillations of silver nitrate by *Guyon's* method. Ten to fifteen drops of silver nitrate solution (5 to 20 grains to the ounce) are injected by a syringe reaching the membranous urethra, or by a catheter. The instrument is gradually withdrawn during instillation, so that the fluid is applied from behind forwards.

2. **Congested Patches.**—These are deep red patches in the urethra, and generally co-exist with membrano-prostatic catarrh. They are best treated, through the urethroscope, by touching with silver nitrate (2 to 5 grains to the ounce), then dried and swabbed with glycerine. This should be done once or twice a week for three or four weeks. These patches may cause stricture during healing. We may here mention that gleet is not synonymous with stricture. 'Many inflammatory thickenings merely involve the mucous membrane and do not invade the submucous tissue, and, if treated, do not contract to form stricture.'

3. **Glandular Urethritis.**—This is a rare, but obstinate, condition. The mucous membrane round *Littré's* glands and the crypts of *Morgagni* are swollen Through the urethroscope a double row of yellow spots is seen

along the dorsum of the penis. These may form stricture during healing. The best treatment is electrolysis. A fine platinum point connected with the negative pole is inserted into the glands. The positive pole is placed on the body. A current of 2 to 5 milliampères destroys the glands in five minutes. If this fails, internal urethrotomy along the dorsal surface should be done.

4. **Urethral Warts.**—Gonorrheal warts sometimes occur in the urethra, and may cause gleet. After applying cocaine, they should be gouged off with the tube of the urethroscope and removed by fine alligator forceps. The surface is then dried and iodine applied.

5. **The veru montanum** occasionally becomes infiltrated, and generally causes incurable gleet. Silver nitrate may be applied, or the part may be removed by a cutting prostatoscope.

6. **The prostatic sinuses** are sometimes affected, and are difficult to treat. A ranula of the sinus sometimes forms from blocking of the duct. In such a case an incision should be made. If there is no ranula, deep astringents may be used.

Treatment by Sounds.

Some chronic gleets may be cured by the passage of a large sound every other day. The discharge generally increases after the third or fourth time of passing, when the sounds should be left off. Mild astringent injections are generally required to complete the cure. Some surgeons recommend the application of medicated ointments on sounds, but the ointments are of doubtful value, and the benefit derived, if any, is probably due to the mechanical action of the sound, which stretches chronically inflamed patches and stimulates healing.

Conclusion.

Considering the number of drugs recommended for gonorrhea and the various methods of their application, it would seem almost impossible to come to any conclusion. The majority of the new preparations do not appear to fulfil the claims made for them.

With regard to the methods of *abortive* treatment, no doubt, if used early enough, they may be effectual—*i.e.*, within a few hours after contagion. But how many patients with gonorrhea come under treatment under twenty-four hours?

They cannot even know by that time if they are affected. The abortive cures claimed by *Janet* and others, on the strength of beginning treatment before there is any discharge, but simply swelling of the meatus, are open to this objection: How is it known that they are cases of gonorrhea? It is well known that men may contract a slight anterior urethritis and swelling of the meatus, which subsides either by itself or with simple astringents. It is obvious that such cases cannot be excluded from any so-called abortive treatment. Of course, it may be urged that gonococci were found in the secretion, but I do not believe that we know enough about the gonococcus to say that it is always the cause of gonorrhea. On the other hand, we know perfectly well that a urethritis in which no gonococci are found may run the same course, and may lead to all the sequelæ of gonorrhea. Hence I do not place much reliance on the abortive treatment, and in this I believe Professor *Finger*, who is probably the best authority on this subject, is in accord with me.

As regards local treatment, I think injections of protargol, followed by astringents, such as chloride or acetate of zinc, the best. These should not be begun when there is great swelling

of the meatus and mucous membrane, but this period should be tided over by rest, aperients and salines, and hot baths, with 5 grains of salol thrice daily. Irrigation is irksome both to the patient and the surgeon, and can only be carried out by the latter. The best internal drug is, I think, salol in all cases, but resin of copaiba is said to give good results.

Concerning chronic gonorrhea and gleet, I am of opinion that treatment is overdone. This has been chiefly due to the introduction of the urethroscope. If a urethritis does not get well in a short time, this instrument is often employed, sometimes on the initiative of the surgeon, at other times at the patient's own request. Many patients have heard of this instrument, and insist on its being used. They remark that 'Dr. —— threw the electric light up my urethra,' and if the next doctor they ring the changes on hesitates to use it, they consider him a fraud and not up-to-date in his profession. As a matter of fact, the use of the urethroscope has been overdone. It is true that it is of value in certain cases, but, when used as a routine method, it is apt to do more harm than good by pushing back the discharge into the membranous urethra. The same applies to the introduction of all in-

struments into the urethra. Hence I recommend all instrumental methods to be avoided except in very chronic cases—*i.e.*, cases not yielding to several months of rational treatment.

We should bear in mind the advice given by Sir *Henry Thompson*: 'The introduction of an instrument is, more or less, an evil, never to be resorted to unless a greater evil be present, which its employment may possibly remedy.'

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CHAPTER XXI.

Complications in the Male.

Peri-urethral Infiltration and Abscess.—When urethritis is very acute, or aggravated by coitus, concentrated injections, catheterism, etc., inflammation of the mucous membrane may extend to the peri-urethral tissue or to the corpus cavernosum, and even cause an abscess. As the largest follicles are found in the fossa navicularis, peri-urethral infiltration is usually found in this situation. When this occurs the discharge ceases, and there is great pain in the glans. A painful swelling, the size of a pea develops on one or both sides of the frænum. This may open externally and discharge pus; there is seldom communication with the urethra. Sometimes perifollicular infiltrations have a tendency to induration, and do not suppurate.

An abscess sometimes forms round the bulb, causing constant throbbing pain. The stream of

urine is often diminished from the projection of the swelling into the urethra. A tender swelling can be detected in the perineum. Usually the abscess opens externally without communicating with the urethra; but in some cases, especially where there is organic stricture as well as urethritis, the abscess communicates with the urethra, forming a urinary fistula. The abscess often burrows widely under the skin in several directions before reaching the surface, and forms a series of tortuous channels, along which the urine escapes. The most dangerous peri-urethral abscesses are those in the perineum, owing to the danger of extravasation of urine. The glands of Cowper sometimes become inflamed in gonorrhea and produce a rare form of peri-urethral abscess.

In certain individuals **para-urethral follicles** exist. These are small invaginations of the skin situated near the meatus, in the balano-preputial furrow, on the prepuce and the raphe. If the gonococci reach these culs-de-sac they multiply and cause suppuration. When the canals are long and inflamed they may be felt as cords along the penis. The inflamed para-urethral follicles may form abscesses.

Infiltrations of the cavernous tissue form

painful, ill-defined swellings of one or other corpus cavernosum, accompanied by symptoms of acute inflammation. They rarely affect the whole of the corpus. After the inflammation has subsided, the infiltration may persist and determine induration.

Treatment.—All local treatment of the urethritis should be suspended. The patient should have absolute rest, and cold compresses may be applied to the inflamed part. If the inflammation has subsided, leaving induration, friction with ointments may cause absorption. *Finger* recommends an ointment of gray ointment 20 parts with extract of belladonna 1 part; or iodide of potassium 2 parts with $\frac{1}{50}$ part of pure iodine in 20 parts of vaseline. When there is fluctuation, early incision is indicated.

Prostatitis.—This may be acute or chronic.

Acute prostatitis is a rare complication of gonorrhea. It may occur if a patient with posterior urethritis exposes himself to cold or undertakes severe exercise. It is also said to follow the use of injections immediately after intercourse. Inflammation of the posterior urethra extends to the prostatic glands, setting

up a purulent catarrh, and in some cases circumscribed abscesses. These abscesses may communicate with each other and form large cavities, which may open into the urethra, rectum, or cellular tissue of the perineum. More common terminations of prostatitis are resolution or induration.

The symptoms of acute prostatitis are pain and difficulty in micturition and pain in defecation. There is pain and throbbing in the perineum. During the attack of prostatitis the urethral discharge diminishes. Owing to the pain in passing water there is voluntary retention of urine, the call to pass water being seldom urgent, and hence differing from inflammation of the neck of the bladder. Occasionally fever and rigors occur. After a week or a fortnight the inflammation ends in resolution or suppuration, but the prostate remains enlarged for a long time, sometimes permanently. Suppuration is usually accompanied by rigors. When this discharges there is relief of pain, and urine can be passed easily. In some cases of long standing the urine gets into the abscess and infiltrates the cellular tissue round the neck of the bladder. Unless relief is soon obtained the patient may die of exhaustion.

The diagnosis of acute prostatitis is made from the history of recent urethritis, the pain and weight in the perineum, pain and difficulty in micturition and the swelling of the prostate felt *per rectum*. Perineal abscess is distinguished by the pain and swelling being felt in the perineum and not in the rectum. Inflammation of the neck of the bladder and cystitis are characterized by the violent spasm at the end of micturition, by the absence of painful defecation or retention of urine.

Treatment. — In the early stages the bowels must be cleared and the patient put to bed with a moderate unstimulating diet. Alcohol and coffee must be avoided. If there is much prostration, quinine in 5-grain doses should be given three or four times daily. Pain must be relieved by belladonna and opium suppositories. Local treatment consists in hot hip-baths, leeches to the perineum, and the evacuation of pus when present. Glycerine and belladonna may be spread over the perineum.

Chronic prostatitis may follow the acute form or may come on gradually during the course of urethritis. The immediate cause of chronic prostatitis is extension of urethritis to the prostatic urethra. Gout and rheumatism are said to be predisposing causes. In most cases the

morbid changes are limited to catarrhal inflammation of the prostatic urethra and the ducts which open into it, with some congestion of the gland.

The symptoms are complex. There is usually discomfort about the anus, increased by sitting or walking for a long time. The bowels are constipated and the digestion poor. There is often pain in defecation, and pain in the prostatic urethra on micturition. The urethral discharge contains masses of inspissated matter. Prostatic mucus can sometimes be pressed into the anterior urethra by a finger in the rectum.

Treatment.—Chronic prostatitis is difficult to treat. When the organ is tender, violent exercise and riding must be avoided. The diet should be nourishing, but stimulants are best avoided. The bowels must be regulated, and quinine and nux vomica are useful tonics. Sea-bathing is beneficial. When the prostatic tenderness has subsided cold hip-baths are good. Counter irritation to the perineum by iodine is sometimes of benefit. When the prostate is not painful to pressure its relaxed ducts may be stimulated by passing a steel sound twice a week. Sometimes the injection of a few drops of nitrate of silver (20 grains to the ounce) by a *Guyon's* injector is beneficial. *Finger* uses suppositories

of iodide and bromide of potassium with extract of belladonna.

Inflammation of the Neck of the Bladder.—This may be caused by alcoholic excess, or the use of strong injections. The attack occurs sometimes during the second or third week, when it may be simply an extension of the urethritis to the bladder. When this takes place the urethral discharge diminishes. Sometimes cystitis does not occur till the urethritis has almost disappeared.

The symptoms are frequent desire to micturate; burning pain at the neck of the bladder, which radiates to the loins, thighs, and abdomen; the presence of pus or blood in the last drops of urine. Generally the affection subsides in a few days, but in rare cases acute general cystitis may develop. **Treatment** consists in rest in bed, unstimulating diet, laxatives and alkalis, warm baths, and opium and belladonna suppositories. After the inflammation has subsided, the urethritis is better treated with copaiba or cubebs than by injections. **Pyelitis** and **nephritis** occasionally occur by extension from gonorrheal urethritis.

Epididymitis and Orchitis.—Epididymitis occurs by extension of inflammation along

the ejaculatory duct and vas deferens. The body of the testicle is only affected secondarily to the epididymis. The exciting causes are said to be sexual or alcoholic excesses, strong injections, and violent exertion; but epididymitis often occurs when careful treatment has been adopted. The usual time of occurrence is the third or fourth week.

The symptoms consist in pain in the groin and along the spermatic cord, followed by pain and swelling of the epididymis. The swollen cord may be pressed upon by the pillars of the abdominal ring, giving rise to nausea and vomiting. The pain is sometimes acute, and there may be some fever. Sometimes there is rapid effusion into the tunica vaginalis, forming an acute hydrocele. Relapses are common, and may affect the other testicle. The usual termination of epididymitis is resolution; but sometimes induration is left, which obliterates the seminal tubules or the vas deferens. This may cause sterility if it affects both testicles. In some cases, after repeated attacks, a permanent irritability of the testicle remains. This has been called neuralgia of the testis. Occasionally peritonitis may occur by extension of the inflammation from the vas deferens. Epididymitis attacking an

undescended testicle is important, since it might be mistaken for hernia.

Treatment.—The patient should rest in bed if possible; if not, a suspensory bandage, or bathing drawers, should be worn. The diet must be unstimulating, and the bowels kept freely open. The application of leeches to the scrotum is often useful, and glycerine and belladonna may be applied. Hot hip-baths are beneficial. When the body of the testis is affected, cold applications give relief. *Diday* recommends ice in two india-rubber bags, one placed beneath, and the other on the top of the testicle. Hydrocele fluid, if considerable, should be drawn off. *Berkeley Hill* does not advocate the application of mercurial ointment, but recommends collodion, which contracts the skin and compresses the parts within. During the later stages iodides are useful, in doses of 3 to 10 grains thrice daily.

Vesiculitis or Spermato-cystitis.—*Jordan Lloyd* drew attention to the frequency of inflammation of the seminal vesicles in gonorrhea, and came to the following conclusions: (1) Spermato-cystitis, although seldom recognised, is not uncommon; (2) it is in many ways analogous to salpingitis in women; (3) it is usually secondary to urethritis; (4) suppuration

is rare, but when it occurs, the pus should be evacuated by a perineal excision; (5) it often accompanies epididymitis; (6) it is usually diagnosed as prostatitis; (7) diagnosis can usually be made by careful digital examination per rectum; (8) gleet is a common result of spermato-cystitis; (9) it may be acute, sub-acute. or chronic. The acute form usually occurs in gonorrhea, the sub-acute in non-specific urethritis, and the chronic as a sequel of either of the others.

Fuller states that about a third of the cases of seminal vesiculitis are tuberculous. The symptoms of vesiculitis are the same as those given as characteristic of prostatitis, vesical irritability, and inflammation of the neck of the bladder. A correct diagnosis can only be made by examination per rectum. Acute vesiculitis occurs usually during the second or third week of gonorrhea, and begins with deep throbbing pain in the perineum and pelvis. This is accompanied by increased frequency of micturition and vesical tenesmus. Defecation is also frequently painful. The urethral discharge diminishes or ceases altogether when these symptoms arise. The most important sign is the swelling felt per rectum, which occupies the base of the bladder and extends beyond the reach of the finger. The

swelling is due to inflammatory infiltration of the connective tissues between the tubules of the vesiculæ.

Chronic vesiculitis gives rise to variable symptoms, among which are intractable gleet, not depending upon stricture, and intermittent in character; recurrent irritability of the bladder; seminal emissions, often blood-stained and slightly purulent. Per rectum, in chronic cases, the vesiculæ can be felt distended and hardened, and can be easily differentiated from the prostate. Some cases end in suppuration, forming deep-seated abscesses.

Treatment.—In the acute form the treatment is the same as for prostatitis—viz., rest in bed, low diet, leeches to the perineum, morphia or belladonna suppositories, warm fomentations, and avoidance of constipation. The urethra should be left alone. If pus forms, it must be evacuated by a perineal incision guided by a finger in the rectum. *Fuller* recommends a plan of regularly emptying or 'stripping' the contents of the vesiculæ by digital manipulation in chronic cases. The bladder being full, and the patient in a stooping position, the forefinger is introduced into the rectum and counter pressure made above the pubes. The contents of the

distended vesicles are pressed out into the urethra. The patient then urinates and the urine is examined. Gelatinous masses, pus and blood corpuscles, dead spermatozoa, and epithelial cells are usually found. The treatment is repeated once a week till the tonicity of the vesiculæ is restored. The duration of treatment varies from one month in subacute to many months in chronic cases. *Fuller* is of opinion that the average forefinger is long enough for this manœuvre, and that the resistance of the perineal muscles can be overcome by gradual pressure.

The **prognosis** of acute cases is good; that of chronic cases depends on the duration of the disease, but is usually good.

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CHAPTER XXII

Gonorrhea in Women.

'No disease has such a destructive influence upon the health and procreative function of woman as gonorrhea' (*Morrow*). Again, an important economic factor is the charge upon the community resulting from blindness due to gonorrhea, mostly contracted by the new-born infant during parturition. *Morrow* puts this at 20 to 30 per cent. of cases of blindness in the United States, and the percentage in England is about the same. Hence we must regard gonorrhea, not as a trivial complaint, but as a social danger, leading to sterility in man and woman; to complications often resulting in life-long invalidism, and in a large percentage of cases to one of the most terrible afflictions to which mankind is subject—blindness.

Infection.—The primary seat of gonorrhea in women is a matter of some dispute. *Finger* maintains that the parts affected by the gono-

coccus in the female in order of frequency are the urethra, the cervix, Bartholin's ducts, and, lastly, the vagina. When the vagina is affected, this is said to be secondary to inflammation of the cervix or urethra.

Berkeley Hill defines gonorrhea in woman as 'a contagious purulent inflammation of the vaginal mucous membrane and its continuations, with certain occasional complications of more distant regions. The disorder begins at the lower part of the vagina, but rarely remains limited to that locality. The inflammation usually invades also the vulva, the upper part of the vagina, and the cervical portion of the uterus; it also frequently extends to the urethra, and sometimes to the bladder, or to the interior of the uterus, the Fallopian tubes, and the peritoneum.'

This seems to be the most rational view of the question, for the lower part of the vagina is obviously the most likely part to be first contaminated. In 87 cases of acute and sub-acute gonorrhœa which the author examined at the Lock Hospital, there was vaginitis in all, endo-cervicitis in 29, and urethritis in 7. Hence clinical experience does not appear to agree with the results of bacteriological investigation. At any rate, in nearly every case there is puru-

lent vaginitis, which, whether it contains gonococci or not, is the main part we have to treat; and, further, the results of clinical experience show that energetic treatment of the vagina tends to check extension of the disease.

Gonorrhea may be present in women in an active condition, although no symptoms are visible. *Neisser* examined 527 clinically healthy prostitutes, and found gonococci in 126. This would appear to show that diagnosis cannot be made with certainty without bacteriological examination, and that many cases are overlooked. On the other hand, as *Jullien* points out, a woman may receive the germ and transmit it without herself becoming infected. It appears that gonorrheal pus may remain in the vagina for several hours without infecting it. In this way one man may contract gonorrhea from another, the woman acting as an intermediate vehicle. Naturally this leads to complications, and the blame may be thrown upon the wrong party.

Gonorrhea insontium, as the French name it, may be contracted by an innocent person by means of contaminated towels or water-closets. Although such means of contagion are comparatively uncommon, they do

not belong to the realms of fable. Contagion in this way is frequently put forward as an excuse, and as frequently ridiculed: nevertheless it may occur. Several instances of epidemics of vulvitis in girls' schools have been known, which probably originated in the promiscuous use of towels which were in the first instance contaminated with gonorrheal pus.

Syphilis insontium is a well-established fact, and gonorrhea insontium, if we include cases of gonorrheal ophthalmia, must be more frequent.

Treatment. — The routine treatment of gonorrheal vaginitis by the douche is not efficacious alone. It is almost impossible by vaginal douching to treat the whole of the vaginal surface—first, because the injected fluid seldom reaches the culs-de-sac surrounding the cervix, and so leaves the upper end of the vagina untouched; secondly, the vaginal rugæ are not distended, and so the furrows between the rugæ are not properly reached by the fluid. What is required is a form of treatment which will obviate these difficulties, and start by treating the upper portion of the vagina, and also as far as possible distend the rugæ. This may be done by three methods: (1) Application of lotions, such

as silver nitrate, through a speculum to the whole of the vaginal surface; (2) plugging the vagina with wool tampons soaked in medicated fluids; (3) medicated pessaries, the best of which are the gelatine-glycerine.

1. **The Silver Nitrate Treatment.**—From what I have seen of this treatment it is practically impossible in a case of acute vaginitis to carry it out thoroughly without an anæsthetic; also the irritation produced is often as bad as the vaginitis itself. Either of the following methods is therefore much to be preferred.

2. **The Wool Tampon Method.**—This consists in passing through a Ferguson's speculum plugs of wool soaked in a glycerine solution of the required drug, or a glycerine emulsion. A useful addition to this consists in lubricating the speculum with a vaseline preparation of the same drug, whereby the rugæ of the vagina are distended by the speculum, and, at the same time, lubricated by the drug. Two or three fair-sized plugs are usually sufficient. This treatment should be repeated daily, the vagina being irrigated before each application.

The best drug to employ is a matter of opinion. A glycerine solution of *ichthyol* (2-5 per cent.) is good. Glycerine of borax may also be

used, or glycerine of perchloride of mercury (1 in 500).

In many cases the inflammation is too acute to enable one to pass a speculum. In such cases it is best to use a vaginal douche for a few days till the vagina is less sensitive. (The douche I use for this purpose contains a drachm each of sulphate of zinc, acetate of lead, and borax to the pint, with an ounce of glycerine.)

3. **The Treatment by Pessaries.**—I have for some time given up the tampon method in favour of this, which is less painful and equally efficacious. Gelatine-glycerine is the best basis for the drug, being much superior to oleum theobromæ. These pessaries gradually melt and lubricate the vagina. They should be passed into the cul-de-sac behind the cervix and kept in place by a tampon.

As regards the drugs used I have tried the following: Iodine, 1-2 per cent.; ichthyol, 2-5 per cent.; perchloride of mercury, 1 in 500; argonin, 5 per cent.; lysol, 2 per cent.; formalin, 2 per cent.; airol, 10 per cent.; naphthol, 2 per cent.; copaiba resin. The best results have been obtained by iodine and ichthyol. Argonin, airol, naphthol, and copaiba have the objection of being in suspension and not in solution.

The pessary treatment is, I think, by far the best for vaginitis. By this means, and also by the tampon method, the upper vagina is well treated, and hence the liability to endocervicitis and endometritis by extension of the inflammation is much diminished. I have seen many cases treated only by douching, where the cervix and upper vagina were still inflamed, although the lower part of the vagina was healthy. Endocervicitis is a frequent result of cases treated by douching, but, so far as I have seen, is much less common after either of the above methods.

Complications of Gonorrhea.

Urethritis.—As far as clinical observation goes, urethritis is uncommon in women. That is to say, although there is frequently some degree of inflammation of the meatus, as part of a general vulvitis, the scalding and dysuria common in the male urethra is usually absent in women. When present it is best treated by copaiba and santal. I have tried methylene blue with doubtful benefit.

Abscess of Bartholin's Glands.—This is a fairly common complication. Simple incision will suffice in many cases; but in some cases, and especially where there has previously

been a cyst in the gland, it is necessary either to excise the gland or remove a part of it and apply strong antiseptics to the cavity.

Endocervicitis and Endometritis.—Gonorrhea is one of the commonest causes of these complaints. As stated above, they may be prevented to a great extent by the methods recommended. The best treatment for endocervicitis is the application of sulphate of copper (40 grains to the ounce) to the cervical canal by means of a *Playfair's* probe lightly covered with wool. This may be alternated with the application of tincture of iodine, but the latter is of little use by itself, as it fails to coagulate and remove the tenacious mucus lining the canal. Iodized phenol is also useful in obstinate cases. If such treatment fails, the only resource left is curetting, unless the surgeon cares to employ zinc and alum points.

Endometritis of gonorrheal origin is very difficult to deal with, owing to the fact that in many cases there is stenosis of the internal os. If the discharge is severe, and treatment of the cervical canal fails to arrest it, the cervix should be dilated with *Hegar's* dilators, the uterus curetted, and iodized phenol applied to the whole surface. But when once the inflamma-

tion has passed beyond the internal os the case is likely to become chronic.

With regard to curetting, the only satisfactory instrument to use is the flushing curette. Such an instrument has been made for me, which is simply a modification of *Barker's* flushing curette. This curette has a scraping edge on both sides, enabling the operator to scrape in both directions without turning the instrument round. Another advantage is that the scraping end is not of much larger diameter than the flushing-tube, thereby avoiding the liability of the end to get nipped by the cervix. Most uterine flushing-tubes in the market have the end too large and the flushing-tube too small in calibre.

Gonorrheal Warts or Papillomata.—These appear to be caused by the irritation of chronic discharge from the vagina and cervix. They vary in size from a pin's head up to large masses of papillomata the size of one's fist. They sometimes occur on the top of condylomata, forming the so-called warty condyloma, which is really a combination of condyloma with gonorrheal warts.

Small warts are best treated with pure carbolic acid or fuming nitric acid. If they are numerous

the compound savin and copper powder is a useful application. (Subacetate of copper ʒi., pulv. sabinæ ʒiii.) If the warts are too large, or recur under this treatment, *Paquelin's* cautery must be used. Large papillomata are best removed with scissors and *Paquelin's* cautery; bleeding is sometimes free, but is usually stopped by the cautery. In some cases the cautery itself may be used as a knife for removal of papillomata.

At the same time the discharge should be treated by astringent and antiseptic douches, and the cervical canal treated in the way mentioned above.

Salpingitis.—Gonorrhea in women is the most common cause of salpingitis by extension of the inflammation to the Fallopian tubes. *J. W. Taylor* recently read a paper on the subject at the Gynæcological Society (May, 1899), and I cannot do better than quote his conclusions.

1. A large number of women who are suffering from tubal disease have been, at some time or other, exposed to the infection of syphilis, as well as of gonorrhea. These show marked improvement after a prolonged course of mercury and iodides, and in the course of this treatment, unless acute pyosalpinx supervenes, it is the rule for

physical signs of the disease to slowly and permanently disappear.

2. Many cases in which there is no history of syphilis, including cases in which there is a history of gonorrhea only, also improve and get permanently well under the same treatment, provided always that the disease stops short of acute pyosalpinx and its dangerous complications.

3. Acute pyosalpinx is more common in the left side, and its severity is probably due to secondary infection from the rectum. Such cases, whenever possible, should be treated by free incision of the posterior vaginal fornix, by thorough exploration and emptying of all pus cavities, and by iodoform drainage. This is preferable to the older operation of removal of the appendages, which is more dangerous.

4. Occlusion of the tubes and peritoneal adhesions due to gonorrheal salpingitis must be regarded as secondary mechanical results of the local peritonitis, which has been caused by salpingitis. Their absorption will not be secured by the cure of the gonorrhea, and sterility may persist, although the gonorrhea may be entirely eradicated from the system.

5. In gonorrhea of the pelvis there will probably remain a residuum of intractable cases, par-

ticularly cases of complication with other diseases, such as uterine fibroids. In these cases operative removal of the affected organs will be required, and vaginal hysterectomy, with or without removal of the appendages, is the most rational operation, and gives the best results.

Latent Gonorrhea.—The question of latent gonorrhea is one that involves many problems, especially socialistic. On the one hand, we know that gonorrhea may remain latent for considerable periods, especially in women; on the other hand, the extent of this latency can never be satisfactorily settled owing to the possibility of second infection.

According to *Jullien*, there are in women cases of incurable gonorrhea, which, while remaining latent during the inter-menstrual periods, become active at the time of menstruation, when the tissues are warmed and the secretory apparatus stimulated. During coitus the penis expresses the gonococci from the follicles and glandular cavities of the vagina. A latent gonorrhea may also be excited by pregnancy, and, according to *Jullien*, by the use of the sewing-machine and bicycle.

Diday, in 1881, propounded this axiom: 'A woman once infected with gonorrhea remains

for a long time, in some cases permanently, a source of contagious secretions—a source so much the more prolific since it is hidden and, above all, intermittent.'

Again, gonorrhea may be latent in the male, and *Wertheim* has shown that latent gonococci may remain dormant for years behind a stricture of the urethra which had become acclimatized to their presence ; but when these gonococci are transplanted to a virgin vaginal mucous membrane, they again take on an active and virulent state, and if now they are transplanted back to the original field from which they were taken, they may produce a fresh attack of urethritis. In other words, they become vulnerable to the urethra, which was proof against them before, and in this way a vicious circle may be produced. This explains some acute attacks in patients who thought themselves cured.

The bearing of this on social questions and on marriage is obvious. A man may be reinfected with his own gonococci by rejuvenating them on a virgin vagina. In this way a husband may blame his wife after marriage for being the cause of his trouble, whereas he has probably infected her and reinfected himself. The possible complications, both social and legal, which may

ensue are easy to imagine, and are fully discussed by *Jullien* in his interesting book on 'Blennorrhagie et Mariage,' and by *Prince Morrow* in his recent work on 'Social Diseases and Marriage.'

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CHAPTER XXIII.

General Infection in Gonorrhea.

Gonorrhea, at first a local disease, may become general by dissemination of the gonococci or their toxins throughout the system. This may lead to endocarditis, peritonitis, gonorrheal arthritis, or general septicæmia.

Endocarditis.—According to the latest writers the affection may be a mixed one, due to the entrance of gonococci and other organisms into the circulation. Endocarditis due to gonorrhea may result in chronic valvular disease or ulcerative endocarditis. Cases of ulcerative endocarditis have been recorded where gonococci have been found in the blood, on the valves of the heart, and at the same time in the vagina and uterus.

Gonorrheal endocarditis is a rare affection, sometimes complicated with arthritis, but occasionally occurring by itself in the course of urethritis. The treatment is the same as that

of ordinary endocarditis, and the prognosis is always doubtful.

Peritonitis.—Several cases of general peritonitis of gonorrheal origin have been reported. *Cushing* has described two cases in women in which laparotomy was performed, and gonococci found in the peritoneal fluid. In each case the abdominal pain and general symptoms pointed rather to appendicitis. In each case the peritonitis occurred during menstruation after exposure to infection. *Muscatello* has also reported a case of general peritonitis in a woman who contracted gonorrhea twenty-five years previously. Pyosalpinx was found, and gonococci were found in this and in the peritoneal effusion.

Hunner and *Harris* record several cases of pyosalpinx and peritonitis of gonorrheal origin in which the gonococcus was found in the pus of the tubes and peritoneum. They conclude that surgical treatment is of doubtful value in such cases; but, if the diagnosis is doubtful, operation is indicated. Appendicitis must always be borne in mind. A history of recent gonorrhea with gonococci in the cervical, urethral, or vaginal secretions is suspicious. If there is a history of pelvic pain and tenderness and a mass can be felt in one or both ovarian regions, the diagnosis of

pelvic peritonitis is probable; if in addition to this there is general peritonitis, it is almost certain.

The **symptoms** of gonorrheal peritonitis are the same as in other forms of peritonitis—viz., abdominal distension, tenderness and rigidity, vomiting, high temperature, and quick pulse. The clinical course is, however, characteristic, the onset being sudden and followed by abatement of symptoms with rapid recovery. Intra-peritoneal exudation, pelvic adhesions, or pyosalpinx, are often left behind.

Treatment consists in rest in bed, cathartics, turpentine stupes, and liquid diet. If the tubes contain much pus they should be removed; if there is no pus the question of the removal of the tubes is doubtful, and the risk of preserving the child-bearing function must be compared with the possibility of future danger from the tubes.

Affections of the Eye.

Apart from gonorrheal ophthalmia caused by direct inoculation of the conjunctiva with gonorrheal pus, secondary affections may occur, generally associated with gonorrheal arthritis. These affections of the eye are apt to recur at each fresh attack of gonorrhea.

Gonorrheal Iritis is rare, and analogous symptomatically to rheumatic iritis. The plastic exudation is less than in syphilitic iritis. Treatment consists in the administration of large doses of iodide of potassium and quinine, with the local application of atropin.

Gonorrheal Arthritis.

Gonorrheal arthritis, or gonorrheal rheumatism, as it is sometimes called, is divided by *Konig* into four varieties—(1) hydrops, (2) sero-fibrinous, (3) empyema, (4) phlegmonous.

(1) **Hydrops.**—This is the least severe form, and consists of simple effusion into the joint without pain, fever, or thickening of the joint structures. Recovery usually occurs in a few weeks.

(2 and 3) **Sero-fibrinous arthritis and empyema of the joint** are more advanced forms of inflammation. The fluid in the joint becomes turbid and finally purulent. The capsule of the joint is thickened and the temperature is raised. There is much pain on movement, and the joint is red and swollen.

(4) **The phlegmonous form** is the most serious. Effusion is small in quantity, and varies from turbid serum to pus. Fluid may even be

absent, and the joint filled with masses of fibrin. The inflammatory process is severe, and extends beyond the capsule of the joint. The skin is red, tense, and œdematous, and the outline of the joint is lost. Pain is very severe, even the pressure of the bedclothes being intolerable. Muscular wasting is rapid and severe. Sometimes the joint is disorganized, and dislocation may occur. As the process subsides adhesions form, and the joint becomes ankylosed. The severity and rapidity of the process vary considerably, and the condition gradually becomes chronic.

The joint affections sometimes begin as 'flying pains,' affecting several joints, one of which then becomes more acutely affected. In the latter stages of gonorrhea, or gleet, several joints are usually affected with different varieties of inflammation. The disease is hence polymorphous. Examination of reported cases shows that the lower extremity is affected about twice as often as the upper. The knee and ankle are most often affected, the hip, shoulder, hand and wrist, temporo-maxillary and sterno-clavicular joints less frequently. A peculiar and common symptom is pain in the heel and plantar fascia, where the internal plantar nerve pierces the fascia.

The **pathology** of the disease is said to consist in the migration of the gonococci from the urethra to the joints, and gonococci have been found in the joint effusion in some cases. Others regard it as a mixed infection with the addition of pyogenic organisms. *Lorimer*, in an analysis of 250 cases, found 232 in males. Hereditary tendency to rheumatism was only present in 2 per cent. of the cases and gout in 13 per cent. There was no evidence to show that antecedent rheumatism predisposed to gonorrheal arthritis. The joints affected were, in order of frequency, the knee, ankle, wrist, hip, and shoulder, temporo-maxillary and sterno-clavicular. Conjunctivitis, iritis, and sclerotitis were present in 10 per cent. *Lorimer* is of opinion that many cases occur in women after leucorrhea, and are mistaken for rheumatoid arthritis.

Treatment.—In the acute stage the joint should be kept at rest and the patient in bed, but, owing to the great tendency to ankylosis, the rest should not be prolonged too far. The only internal drug of much value is iodide of potassium, but this often fails. The salicylates, salol and salophen, have usually little or no effect. The best results recently recorded have

been obtained by the *Tallermann* hot-air treatment, daily sittings of half an hour being given at a temperature of 300° Fahr. In chronic cases hot brine-baths and massage are useful. In empyema of the joint arthrotomy is, of course, necessary, *Janet* and others have recommended irrigation of the urethra with permanganate of potassium on the ground that this is the original source of infection and that such a procedure prevents further infection of the joints. It seems to me, however, that this is analogous to shutting the stable-door after the horse has escaped, for the damage is already done. Also local treatment would appear likely to light up further mischief and add fuel to the fire.

Gonorrheal Arthritis in Children. — Recent investigations tend to show that gonorrheal arthritis is more frequent in children than is generally supposed. Several cases of this nature have been recorded by *Halle*. In one case the sterno-clavicular joint was affected in a girl aged seven with vulvo-vaginitis. In another case, a girl aged five, there was arthritis of the hip-joint, supposed to be tuberculous. There was, however, vulvo-vaginitis, no pain in the knee, and no lameness preceding the joint lesion. On these grounds the case was diagnosed as

one of gonorrheal arthritis. *Clement Lucas*, at the Royal Medical and Chirurgical Society (January 24, 1899), reported 23 cases of joint disease in infants following purulent ophthalmia. Of the 23 cases, 18 had ophthalmia neonatorum, contracted during labour, and 5 cases were due to secondary inoculation in older children. The joint disease generally appeared in the second or third week of the ophthalmia, and affected chiefly the knees and wrists. Bacteriological examination showed the presence of gonococci in the discharge from the eyes and in the joints. The form of arthritis was sometimes acute, sometimes only a sub-acute synovitis. It differed from syphilitic joint affection, in appearing earlier and pursuing a more rapid course.

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CHAPTER XXIV.

Venereal Disease in the Army and Navy.

In an article entitled 'The History of a Sanitary Failure' (*Indian Medical Record*, August 16, 1897), is stated, in the form of many quotations from the Army Sanitary Commissions and from people in authority in India, what is considered evidence in favour of the absolute uselessness of State regulation in checking disease in the army. Further, it attempts to show that during the period of State regulation there was an increase both of disease and of immorality amongst the soldiers. Another pamphlet dealing with the same subject was recently circulated by the Friends' Association for Abolishing State Regulation of Vice (1897). We are all familiar with these 'statistics' which are from time to time brought forward by societies for the abolition of every useful advance in medicine.

But concerning the question under discussion, let us examine the value of this so-called evi-

dence, and endeavour to discover the truth of the matter. With regard to the moral side of the question I leave this aside altogether, with the exception of pointing out, as has been done before again and again, that we are dealing with a state of affairs that has existed since the world began, and will continue till human nature ceases to exist; and, further, that moral methods have been tried and failed. The fact we have to deal with is that there is a great amount of venereal disease in the army, especially the army in India, and that such disease ought to be preventable to a large extent.

As an example of how statements can be distorted to serve the purpose required of them, it is only necessary to mention one made in the first paper quoted: 'It is clear that the *Lancet* is conscious of complete failure.' What the *Lancet* said on the subject is really as follows: 'Taking the Lock Hospital system as it existed, and as it has worked in the past, there can be no doubt that the results were disappointing, but we do not at all argue from that that it should be abolished; on the contrary, the whole system should be amended and reconstructed' (September 12, 1896). This is the way things are interpreted by the constructor of statistics;

an evident plea for reconstruction of the State regulation system by the *Lancet* is interpreted to mean an admission of the complete failure of any such system.

Let us examine another statement made in the pamphlet of the Friends' Association. We give the figures as quoted by them, not having had an opportunity to verify them:

Year.	Admissions to Hospital for Disease caused by Immorality (Per Thousand Men in the Army).
1885 (last year of Acts on Statute Book) ...	275
1886 (year of repeal)	267
1887 (Acts repealed)	252
1888 „	224
1889 „	212
1890 „	212
1891 „	197
1892 „	201
1893 „	195
1894 „	182
1895 „	174

The interpretation they give of these figures is that the effect of the repeal of the C.D. Acts on the army in England was to reduce the amount of disease, presumably by rendering immorality apparently less safe. Could anything be more fallacious? There is nothing to be deduced from these figures at all, for it is obvious that

during the period of the Act there would be more admissions to hospital because there was more regular examination of soldiers, and also this was compulsory.

It is unnecessary to quote further from these papers; the above are typical samples of how their statistics are made and their statements manufactured. There is, however, one sentence in the second pamphlet, 'thus hundreds of thousands of readers are misled,' with which I agree *in toto!*

Let us now consider the facts of the case. I had before me all the case-books of the London Female Lock Hospital during the years that the Act was in force, and since that period. During the period of the C.D. Act two wards of that hospital were devoted to 'Government cases'—*i.e.*, cases of prostitutes examined at the garrison towns, such as Aldershot, Woolwich, etc., and sent up to hospital when diseased. At the same time the other wards were employed, as they are at present, for the treatment of voluntary and parish cases, which were not under the Act. An examination of these books was recently made by me at the request of Lord *Lister*, to compare the severity of the disease in patients admitted under the C.D. Act and patients who were not

under the Act. The notes of several years were compared, and these again with the notes of cases after the Act was repealed.

The result was exactly what one would expect —viz., that the severity of the cases admitted under the Act was vastly less than those admitted voluntarily. I have not space to give all the figures, but any sceptical person can examine the books himself. Roughly speaking, there was *one* severe case under the Act as against *ten* severe cases not under the Act, during the same periods of time; and since the repeal of the Act the proportion of severe cases keeps nearer the higher proportion. The average time of detention was also not more than half in the case of Government patients as compared with the other cases, in spite of the fact that the former were compulsorily detained till free of symptoms, while the others could take their own discharge.

This shows at any rate that by compulsory examination the diseases are taken early and cured quicker (by cured I mean, in the case of syphilis, rendered free from infection at the time of discharge from hospital). Also by compulsory detention during the contagious period it is obvious that disease must be diminished.

Now for some reliable figures. While the Act

was in force in fourteen garrison towns in England the proportion of venereal diseases is shown as follows:

Year.	Soft Chancre.	Syphilis.	Gonorrhea.
	Per Cent.	Per Cent.	Per Cent.
1860 (before the Act) ...	14	3·6	13·3
1870-1875 (during Act) ...	5·2	2·0	11·0
1885 (one and a half years after repeal of Act)	12·7	3·7	12·0

These figures show a diminution in syphilis from 3·6 to 2 per cent. That is to say, during the Act the proportion of syphilis in the army was not much more than *half* what it was before and after the period of the Act. With regard to soft chancre we see there was a still further reduction during the Act, and a corresponding increase after the repeal.

These statements are supported by the account given by *Berkeley Hill* and *Cooper* of the Contagious Diseases Acts and their effect on disease in the army and navy. The following is an abstract from their book:

'In this country much diminution of disease has ensued from the enforcement of measures by which, in certain military districts and naval

ports, the known prostitutes are subjected to periodical medical examination and hospital detention when diseased.'

The Contagious Diseases Acts.— Parliament passed the first measure of this kind in 1864. This was replaced by another in 1866, and a third in 1869. By these Acts any woman whom the police could prove to the satisfaction of a magistrate to be a common prostitute could be sent to a certified hospital for examination, and, if diseased, for detention.

The magistrate also had the power to order the woman to submit to periodical examination so long as she continued to act as a common prostitute within the limits of the district under the operation of the Acts. By a clause of the Acts, a woman might subject herself voluntarily to periodical examination, though in making this subjection she was liable to detention when diseased.

In districts where large military and naval forces are maintained, the effect in lessening the loss of service from venereal disease, though imperfect owing to the limited areas covered by the regulations, was sufficient to prove their usefulness.

The Army.—The following statement concerns the twenty-five largest military stations in the United Kingdom, and compares the stations where the Act has been in force with those in which it was not. In both groups the sanitary regulations of the troops were the same. In 1878, when the Act was in full force, at fourteen stations the admissions per 1,000 were 40. At the fourteen stations not under the Act the ratio was 131 per 1,000. The effect of the Acts was well shown in the case of the Coldstream Guards. This regiment was stationed alternately at London, a town not under the Acts, and Windsor, where the Acts were in force. Mr. *Myers*, surgeon to the regiment for twenty years, described to the Select Committee of the House of Commons in 1879 the change in the regiment while quartered at Windsor since the introduction of the Acts. Mr. *Myers* stated that in 1859 between one third and one half of the men were always suffering from venereal disease. In 1865 there were 49 admissions to hospital out of 707 men. In 1871, when the Act was in full working order, the admissions were 33 out of 700 men; and in 1874, 15 out of 656. In 1876 the number of admissions was 11. The battalion on this occasion arrived from Aldershot, another

station under the Act. In 1875 the battalion came to Windsor from London, and the admissions reached 25.

The Navy.—The influences of the Contagious Diseases Acts is equally striking in the navy. In ports under the Acts, between 1871 and 1879, the ratio of primary venereal sore and syphilis was 39 per 1,000, compared with 94 per 1,000 in ports not under the Acts. The returns showed that before the introduction of prevention measures, the amount of invaliding from venereal diseases was increasing at all the home ports, whereas as soon as the Acts came into effective operation the ratios sank steadily at the protected ports.

In conclusion I can only say that the only rational way of reducing venereal disease in the army, and especially that part of it stationed in India, is a thorough method of inspection ot both males and females, conducted by medical men skilled in such diseases, and isolation of all cases found to be diseased till such disease is free from contagion. The so-called moral training of the soldier and the proposals to occupy his time with harmless pursuits will not affect the question to any material extent. We have to deal with a contagious disease which is

weakening our army. In the case of any other infectious disease, such as cholera or enteric fever, elaborate measures are taken and carried out with success. But because syphilis is usually of venereal origin it is put, by the powers that be, upon a totally different footing.

If the State expects the army to protect the country, it is the duty of the State to protect the army against disease of any kind, whether of venereal origin or not.

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